It's about time

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It's about time:
Essays on temporal anchoring devices

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IT'S ABOUT TIME:
ESSAYS ON TEMPORAL ANCHORING DEVICES

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"The past is never dead. It's not even past." – William Faulkner

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As a teenager, I had no clue what I wanted to study after high school or do for a living. I also made it a habit to not think about the future, which is uncertain and full of surprises by definition. To have as many possibilities as possible upon graduating high school, while delaying having to think about the future, I opted for courses focused on the natural sciences, supplemented with economics and management courses. I was quite happy with my curriculum, as it also allowed me to drop the subjects German and History, which I didn't enjoy to say the least. Ironically, those two subjects proved to be at the center of my research over the course of the PhD. Luckily, I grew quite fond of them over the years.

By the end of high school, I still didn't know what to study and after a short visit at TU Eindhoven, I enrolled for an orientation semester in Amsterdam. The latter helped me choose the bachelor 'Business Studies' and Tilburg would be the place where I would study, and live. I started the program in September 2008, to learn that it would be terminated or 'transformed' that same winter. I felt betrayed, here I was after a year of 'soul' searching, forced to think about the future, proud of having done so, to hear that the program would be discontinued. Hence, after three years I left Tilburg University for a master at RSM. My thesis supervisor in Rotterdam asked whether I would be interested in doing a PhD, but at the time I had zero interest. I started a job at a company, which I enjoyed for a while until I didn't anymore. Maybe, my thesis supervisor had planted a seed in my mind that finally started growing. Another period of soul searching began and I decided I wanted to at least try to pursue a PhD. By this time, I just moved into a new apartment in Tilburg, hence that would be where I would apply for the Research Master hoping to get into the PhD program. The result of that decision you're holding.

I never knew what I wanted to 'become' and I had many regrets about past (academic) choices, options foregone, and roads not taken. Sometimes I wish I would think about the future more often. Maybe then I would have chosen to pursue a PhD earlier. However, I realize without those decisions and actions, I might not have been where I'm today. For the first time I feel and know I made the right choice, without any doubt. Although the Research Master and PhD were far from easy, in hindsight I enjoyed them very much. This thesis, but more so this feeling, a combination of happiness and certainty, would not have been possible without the guidance, support, and help from many others. Here, I would like to take the opportunity here to thank them.

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the vineyards of Austria. I am most fond of all those nights that we managed to get caught in one of Vienna's infamous summer showers, soaked from head to toes, but still laughing. These memories are priceless. When the PhD seemed impossible, you were there to remind me to keep pushing forward. With you, I'm excited about and can't wait for the future!

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A PhD is not done alone and throughout the trajectory I met many people at Tilburg University who made the experience count. Vesna, Matthijs, and Joyce, you made the PhD process enjoyable with many long talks, lunches and dinners, or sporty activities. Coming to the office was something to look forward to with you there. Furthermore Vilma, Joshua, and Mohammed, together we struggled and lived through the Research Master and PhD, thank you. Thank you to all (former) colleagues at the department, who have made me feel at home, during seminars, presentations, coffee chats, the volleyball tournaments, or runs. A special thanks to Vincent, Joobin, Yasir, Joris, Jacob, Joeri, Yang, Akhil, Evita, Miranda, Carol, and Bert. I had the great fortune to spend quite some time visiting WU Vienna. Thank you Renate, Markus, and Elisabeth for making that possible and always having a space for me. Thank you Vivian, Ines, Thorsten, Sebastian, Roman, Alex, Niko, and Gloria for lunches at WU and l'Osteria, nights out, and making conferences unforgettable.

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TEMPORAL ANCHORING DEVICES: AN INTRODUCTION

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Abstract

This thesis focuses on a phenomenon that received little scholarly attention: *temporal anchoring devices* (TADs). We define TADs as short references to time that are often accompanied by a descriptor, a common example is the use of "since *year*" on organization's buildings, in a logo, or on products, etc. TADs seem to be ubiquitously used by organizations, spanning organizational field, country, cultural, and religious boundaries. Yet to date, scholarly attention has solely focused on TADs referring to the past. In this introductory chapter we theoretically explore the different types of TADs – referring to the past, present, or future, and their potential usages by organizations. Two, neither exclusive nor exhaustive, usages for TADs we advance are (i) to aid the creation, maintenance, and reinforcement of organizational identity, and (ii) to create a sense of stability and continuity. We contend that TADs are short and subtle, yet powerful devices, worthy of scholarly attention.

INTRODUCTION

Temporal anchoring devices (TADs), short references to time often accompanied by a descriptor, provide a conceptual and empirical link between the almost universal institution of time reckoning that uses the Gregorian calendar[1] (Zerubavel, 1982) and the more micro level of organizational practices. Time reckoning refers to the choice of temporal reference points and time measurement (Bergmann, 1992). A prominent example of TADs is the use of "since *year*" on organizations' buildings, windows, in logos, and on product packaging amongst others. The concept of TADs has received scant attention in organizational literature (exceptions are Beck, Lude, & Prügl, 2016; Pecot & De Barnier, 2017; Pecot, Merchant, Valette-Florence, & De Barnier, 2018; Suddaby, Foster, & Quinn Trank, 2010) and has not been developed theoretically. This is surprising, given the ubiquitous use of TADs by organizations, crossing country, cultural, religious, and industry boundaries[2]. Hence the questions: What are these references to time, that we call TADs, and what is their use?

Building on the organizational communication, organizational history and temporality, and the sociology of time literatures, we develop the concept of TADs and their potential uses by organizations. This essay considers several types of TADs – referring to the past, the present, and the future, their potential meanings, and suggests different organizational usages for TADs. We do not intend to develop an exhaustive list of drivers for the use of TADs; however, we aspire to foreground TADs and highlight their potential in advancing our understanding of organizations. The essay is based on the premise that TADs carry meanings that reach beyond the indication of (organizational) age or temporal orientation. They are accumulations and integrations of institutional and organizational meanings that are enduring, wide reaching, and often taken for granted. Denoting the year on coins, wine, and whiskey underscores that TADs transcend a mere relation to age. In these instances, the year is (or was, when coins were still made of precious metals such as gold and silver) informative of the intrinsic value of the artifact, and maybe by extension, of the organization.

To date, humans have not managed to harness, control, manipulate, or master time (see for instance Eddington, 1928; Hawking, 1988), even though ways have been created to

[1] Countries that do not use the Gregorian Calendar are Afghanistan, Iran, Ethiopia, and Nepal. Bangladesh, India, China, and Israel use other calendars alongside the Gregorian Calendar. Taiwan, Thailand, North Korea, and Japan use modifications of the Gregorian Calendar (WorldAtlas).

[2] A blog post of Emblemetric (2017) reports on a steady increase in the number of trademarks filed that include "established" (or derivations thereof) and "since" between 1910 and 2015 at the United States Patent and Trademark Office. These exclude from analysis any TADs that are featured with other descriptors, or without descriptors. Furthermore, it does not give an accurate representation of the cumulative number of trademarks featuring a TAD, let alone those organizations that have not filed an application for a trademark. Still, it gives an indication of the abundance of TADs used.

measure, buy, and spend time. We cannot travel through time the same way we travel geographical distances, nor can we revisit past times the same way we can return to places. That does not mean that individuals, organizations, and societies merely live in the present. The past is lived in the present through reminiscence and nostalgia (e.g., Brown & Humphreys, 2002; Gabriel, 1993; Lyon & Colquhoun, 1999), remembrance and reconstruction (e.g., Hatch & Schultz, 2017; Suddaby, Foster, & Quinn Trank, 2016), and commemoration (e.g., Gillis, 1994; Zerubavel, 2003) and celebration (Dandridge, 1979; Johnston, 1991). The future is brought into the present through expectations, anticipation, and planning (e.g., Carton, 2014; Gephart, Topal, & Zhang, 2010; Schultz & Hernes, 2013, 2019; Stjerne & Svejenova, 2016), but also by deliberate attempts to communicate with the (distant) future (Benford, 1999). In other words, the past and future are lived in the present.

Time paces everyday life and the repetitive cycles of days, weeks, months, and years fulfill a psychological and social need for rhythmic alternations (Zerubavel, 1985). This repetitive cycle guarantees an alternation between regular and peak activity and allows expecting and planning for "extraordinary" days, whether the weekend or a festive day, on "ordinary" days, such as weekdays or workdays (Zerubavel, 1985, 1989, 2018). This repetitive cycle of time originated in religion (Zerubavel, 1982, 1989). "Extraordinary" days are those days of religious worship, recurring weekly (e.g., Friday for Muslims, Saturday for Jews, and Sunday for Christians) or annually (e.g., Eid al-Fitr, Pesach, and Christmas). However, with a decline in religious affiliation, regular service attendance, and religious belief (Center, 2011; Cooperman, Smith, & Cornibert, 2015; Crockett & Voas, 2006; Sherwood, 2018)[3] that dictated the rhythm of life, people crave comparable rhythms and celebrations, giving rise to the celebration of anniversaries of political people and events, influential artists and academics, and nations, regions, or places (Johnston, 1991).

Noting anniversaries of prominent individuals is illustrative. For instance, the observance of Martin Luther King Jr. Day in the United States on the third Monday of January which was first observed on January 20, 1986. It is not extraordinary only because of his work for nonviolent activism and protests against racial discrimination in federal and state law, Martin Luther King Jr. Day is the first official holiday that recognizes an individual who has never held public office. Another example is Presidents' Day – the holiday devoted to George

[3] Most of the publications available center around the active worship of Christianity. Although there has been a steady increase in people that are non-religious and decline in active Christians, these numbers and reports are centered around West and North Europe and the U.S. Many other parts of the world have seen stable or increasing numbers in active worship.

Washington, the first president of the United States. A contested example is the recognition of Columbus Day, which is observed in several countries. For instance, in Spain the anniversary of Columbus' arrival in the Americas is celebrated as Fiesta Nacional (National Day). However, many states in the U.S. and countries throughout the Americas have changed the name of this day to recognize the indigenous people instead of Columbus. An example of acknowledging academics and scholarly work, is the 14th of March that marks World Pi Day, the birthday of Albert Einstein, and the day Stephen Hawking died. Although the 14th of March is not an official holiday, nor recognized by a broad audience, it is noted and celebrated by a smaller audience.

Concurrent with the emergence of observance of non-religious extraordinary days an industry devoted to celebrations and commemorations evolved (Johnston, 1991). Organizations recognized the trend and began to take pride in their history to increase visibility and boost performance. Hence, this period also saw the emergence of advisory organizations such as *The History Factory* "transforming futures, since 1979", among others (see for instance Seaman & Smith, 2012). However, celebrating an organization's anniversary and references to its past represent only one type of TADs (those referring to the past) and one use of TADs (celebration). Although TADs referring to the past can boost consumers' evaluations of the organization (Beck et al., 2016; Pecot et al., 2018), we know little about the (intended) effects of those TADs on a wide set of internal and external audiences, and we are clueless regarding those TADs referring to the present (e.g., "since 2020") and the future (e.g., see the aforementioned claim of The History Factory). Many TADs are indeed intended to increase organizational performance, however we propose mechanisms as how TADs can increase performance (e.g., why they create legitimacy or authenticity) and serve other functions, e.g. reinforcing group boundaries, fostering organizational identity, and bringing a sense of stability and continuity, as well.

The taken-for-grantedness of TADs, is emphasized by the lack of explicit attention paid to them by designers and practitioners. Although TADs are often included in designs, an explicit explanation for their use is often lacking (for exceptions see the blog entries of Dahiya; Emblemetric, 2017). Furthermore, even though organizations use TADs, the indicated year can be inaccurate. Noteworthy examples are Cadbury celebrating their centennial two years late (Rowlinson & Hassard, 1993) and Levi's referring to 1850 instead of 1853 as its year of founding (Panek, 2020). These inaccuracies can be explained by typographic errors, organizational forgetting, and the increase of attention paid to heritage and dates only later in an organization's life. Yet, the fact that these organizations still choose

to use TADs and celebrate the (alleged) founding of an organization or other key events, indicates that organizational decision makers value and attach utility to these seemingly subtle and small references.

What we aim this essay to advance, is an understanding of TADs that provides a link between the almost universal time reckoning system, its meaning and function, and the more micro level expression of it, organizations' use of TADs. As such we intend to create an understanding of different types of TADs and some of their functions, and explicitly articulate the often taken-for-granted meanings of such small and subtle communicative devices. In the next section we summarize the developments in the sociology of time, as well as the organizational literatures on time, with a focus on the meanings and functions of time. We then develop the concept of TADs in general, and the categories of TADs specifically, building on the organizational history and temporality and organizational communication literatures. Next, based on these sections we propose some ways organizations use TADs. Finally, we present the overarching research question this thesis aims to answer and how the specific thesis' chapters advance our understanding of TADs. Specific research suggestions conclude the essay.

TIME

Time is defined as "a nonspatial continuum in which events occur in apparently irreversible succession from the past through the present to the future" (Ancona, Okhuysen, & Perlow, 2001, p. 513). The past comprises the period of time leading up the present, or now, whereas the future is the period of time that is yet to occur (Hawking, 1988). Although travelling back in time is (for the time being) not possible, we will travel into the future, as it becomes the present, and the present becomes the past. However, as William Faulkner famously wrote "The past is never dead. It's not even past.", as it continues to influence the present and future. That the past is not dead, is observed in the abundant use of TADs that refer to the past, often to past years of the Gregorian calendar. The Gregorian calendar may well be the most well-known time reckoning device, an institution created based on religion and with many meanings embedded in it, and functions ascribed to it.

Time reckoning and the Gregorian calendar

Time reckoning is the choice of temporal reference points and instruments to measure time (Bergmann, 1992). Time reckoning defines beginnings (e.g., Christ's birth as the start of the year counting system in the Gregorian calendar) and endings (e.g., 31st of December as

the end of a year in the Gregorian calendar), but also how we measure the passing of time (with clocks and watches, but also calendars). Time reckoning plays an important role in the structuration of time, used to create some order in an otherwise disorderly and continuous flow of time. One of these time reckoning mechanisms is for instance the week.

The seven day week has its origins in Judaism (Zerubavel, 1989), whereas the Gregorian calendar and year-counting system stem from Christianity (Zerubavel, 1982, 1985). Weeks, schedules, months, calendars, and the year counting system impose a cyclical order, and represent an attempt to structure time (Zerubavel, 1982, 1985, 1989). The calendar and year counting system have withstood the test of time; few institutions of civilization have endured longer (Johnston, 1991; Zerubavel, 1977, 1982), even though there is an awareness of its flaws and inaccuracies. For instance, the year 0 is missing, after 1 B.C. comes 1 A.C., and Christ was most likely born in 4 or 3 B.C. (Johnston, 1991).

It is likely that the calendar and year counting system have survived as long as they have because of people's need for rhythmic alternations (Zerubavel, 1985). Although there have been several (attempts to) calendar reforms, these did not endure very long. For instance, by the French after the French Revolution (Zerubavel, 1977, 1987), by Lenin in the Soviet Union (Binns, 1979; Kõiva, 2013), by the Nazis (Ogle, 2015), and by groups in Europe and the United States (Davies, Trivizas, & Wolfe, 1999). According to Zerubavel (1977; 1985; 1989) these reforms were unsuccessful due to the deeply ingrained temporal structure that regulates the lives of social entities such as families, professional groups, religious communities, organizations, and even entire nations. The temporal structure is so fundamental that any attempt to reform was met with widespread resistance. Noteworthy is also that the Gregorian calendar and the accompanying year counting system is almost a universal institution, transcending geographic, cultural, and language boundaries. Although different calendars exist, often the Gregorian calendar exists in parallel, potentially to facilitate international coordination (Zerubavel, 1982), except, at the country level, for Afghanistan, Ethiopia, Iran, and Nepal that each have their own official calendars (WorldAtlas).

Calendars can reinforce group boundaries by creating a sense of belongingness (Zerubavel, 1985). Historically, calendars reinforced group boundaries by synchronizing the activities of those belonging to the in-group, in the case of worship and celebrations (Zerubavel, 1985, 1989). For Jews, calendars synchronized activities on the Sabbath, or Saturday, Christians did so on the Lord's Day, or Sunday, and Muslims on Jum'ah, or Friday. Each of these religions chose a specific, unique, and distinct day of worship for their own

members avoiding overlap with out-group members, thereby reinforcing the group boundaries (Bluedorn, 2002; Zerubavel, 1985, 1989).

With the decrease of active religious practice and worship, an increase in alternative temporal structures took shape (Johnston, 1991). For instance, the commemoration and celebration of past figures who are deemed important for nations or groups, such as artists, politicians, and scientists, or commemoration and celebration of seminal events such as the founding of nations, declarations of independence, or the celebration of designated groups and/or their achievements, for instance Labor Day. These commemorations and celebrations are often recurring events, and as such provide an alternative temporal ordering, reaffirming group boundaries. That is not to say that the weekly days of religious observance, are not important anymore. However, the celebration and observance of extraordinary days outside of religion recognizes that the constellation of the group has changed. In past times, the group used to be predominantly defined by religion, when communities that lived in the same geographic area would for the most part observe the same religion, attend the same place of worship, etc. Over time, groups' definition took on additional characteristics, common among them are nationality, language, and culture. Indeed, religion might still be a defining characteristic of the group, but it might no longer be the most prominent characteristic or the meaning framework used for the time reckoning system. For instance, the need to work and generate an income gained importance over worship and rest after the Civil War in the U.S., when an increasing proportion of the population started to work on Sundays (McCrossen, 2001). With the rise of the 24/7 economy, working in shifts, during the night, and weekend, the lines between "private" and "public" time have become more blurred, as has it become increasingly difficult to synchronize activities with other people that might have different work schedules (Zerubavel, 1985). These shifts emphasize that religion might not any longer be the main order structuring time and activity, as an economic logic has taken precedence.

The calendar, year-counting system, days of worship, festive days, and commemoration days attach meaning to delineated time periods, that make them "extraordinary" compared to their "ordinary" counterparts. That meaning can be at the personal level, for instance the year a student graduates, interpersonal level, for instance ritualized interactions during the day that are repeated (Roy, 1959), but also at the level of groups, such as religious groups observing the same day of worship, an organization's members celebrating its anniversary, or a nation celebrating the day of independence. Furthermore, time is considered a resources, that can be measured, bought, spent, and sold (e.g., Ancona et al., 2001; Leclerc, Schmitt, & Dube, 1995) and the economicity of time (e.g., Ancona et al., 2001; Usunier, 1991; Usunier, 2003) refers

to time acquiring value, that it is monetized. The attachment of meaning to time and time periods, is one of many conceptions of time, referred to as socially constructed time (e.g., Ancona et al., 2001; Hassard, 1990, 1996; Zaheer, Albert, & Zaheer, 1999), or Kairos (Jaques, 1982). Although socially constructed time is informative for our understanding of TADs, it is only one conceptualization of time. In the next subsection, we briefly review other conceptions of time to gain a more complete understanding of time as understood in literature.

Conceptions of time

Prior studies on time in organization studies propose several conceptualizations of time (see for overviews Ancona et al., 2001; Bluedorn, 2002; Brunelle, 2017). First, studies focusing on clock time, or Chronos (Jaques, 1982), define time as infinitely divisibly in quantifiable units on a linear continuum (McGrath, 1988). Studies on clock time focus for instance on time as a tool to exert control (Bluedorn & Waller, 2006). Second, the conceptualization of time as cyclical, where events repeat over and over – like the passing of seasons (e.g., Ancona et al., 2001; Crossan, Pina e Cunha, Vera, & Cunha, 2005; Zaheer et al., 1999). In these studies, organizations adjust their actions to recurring events or periods, for instance, the seasons (e.g., Islam, Zyphur, & Boje, 2008). However, studies on cyclical time also pay attention to recurring processes and interactions not necessarily tied to seasons, but for instance to days (e.g., Mainemelis, 2001; Roy, 1959), or weeks (e.g., Zerubavel, 1989). Roy's (1959) study of factory workers, for instance, showed how rituals recurred during the workweek at set times to break the otherwise monotonous workday. Interestingly, many of these studies nest cyclical time in the conception of time as unfolding in a linear order from past to future (e.g., Ancona et al., 2001; Mainemelis, 2001). Analogous to Zaheer et al.'s (1999) argumentation that different time scales are nested in larger time periods.

Third, time has been conceptualized as event-time (e.g., Ancona et al., 2001; Pina e Cunha, 2004). In event-time the 'before' and 'after' is defined by events that took, are taking, or will take place (e.g., Ancona et al., 2001; Bluedorn & Denhardt, 1988; Orlikowski & Yates, 2002). Related is the notion of process time (Reinecke & Ansari, 2016), in which time is endogenous to events and processes and is qualitatively, rather than quantitatively determined (e.g., Chia, 2002; Reinecke & Ansari, 2016). A fourth conceptualization of time is that of a life-cycle view; a more or less predictable developmental pattern (Ancona et al., 2001). This view is most common in the literature on the development of organizations (Gallagher & Stewart, 1986; Zoltners, Sinha, & Lorimer, 2006) and employee careers

(Pritchard, 2008). These studies, for instance, focus on when, either based on their age or tenure, employees should be promoted to higher positions (e.g., Pritchard, 2008).

The various conceptualizations of time highlight the importance and complexity of the concept. Time is fundamental in our universe, yet it is difficult to grasp, define, and understand (Ancona et al., 2001; Eddington, 1928; Gell, 1992; Hawking, 1988). Furthermore, the different meanings of time can change *over time*. As future visions may cause reconstruction of the past (Kaplan & Orlikowski, 2013; Weick, 1995), the future although envisioned is yet to happen (Weick, 1988), and the present is continuously enacted based on past experiences and future projections (Hernes, 2014; Hernes & Maitlis, 2011; Schultz & Hernes, 2013). However, a basic understanding of the different conceptualizations of time and the meaning attributed to time will aid our endeavor to define TADs – another form in which organizations may attempt to define and enact their time.

TEMPORAL ANCHORING DEVICES

Temporal anchoring devices are short references to time, that are often, but not necessarily, accompanied by a descriptor. A prominent example of TADs is the use of "since *year*" on organizations' buildings, products, commercial vehicles, logos, etc. TADs are symbols – signs of which meaning is known or derived by the interpreter through learnt convention (Burks, 1949; Peirce, 1902; Short, 2007). Although people may not be explicitly aware of having learned these meanings, they have been socialized in such a way that they know the meanings and associations (Bluedorn, 2002), because of both the Gregorian calendar and age norms in society, which for instance inform status and proper social interactions (Neugarten, Moore, & Lowe, 1965). Although the Gregorian calendar may be an almost universal institution, the meaning attached to its years varies across countries, societies, and groups. For instance, for people that have been socialized in the U.S. the year 1776 carries more meaning than for instance 1780. Even though both years are in the distant past, only the former refers to the year the Declaration of Independence was adopted, hence it carries additional meaning. For the French, 1789 is important as it marks the beginning of the French Revolution. For many Dutch people, 1988 is a year with more meaning than 1984 or 1986, as it was (to date) the only year in which the national soccer team managed to play in the finals of the Euro Cup and win.

The *temporal* in TADs refers to an explicit, either visual or textual, reference to time. This could be a year, date, season, clock, etc. *Anchoring* refers to the grounding function of such an explicit reference. By making the temporal reference explicit, organizational

decision-makers impart a certain date or temporal orientation to be interpreted and evaluated by its audiences. Anchoring interrupts time as a continuous flow and highlights time's social character, as the anchoring creates a disruption by emphasizing, for the organization that uses a TAD, a critical date. The anchoring function of TADs is similar to the anchoring effect, which describes how the presentation of an initial cue biases judgment, evaluation, and decision-making, by making what the cue represents explicit (Furnham & Boo, 2011; Tversky & Kahneman, 1974). *Device* relates to the intentionality of using a TAD, a TAD is a communicative device and organizational decision-makers can choose to use it, discontinue the use of TADs, or abstain from the use of TADs in relation to their preferences, needs, and goals. Furthermore, device highlights the materiality of TADs as they are often used on artifacts and objects and are a part of an organization's symbolic practices. TADs are related to, but also distinct from, temporal boundary objects (e.g., Davies & McKenzie, 2004; Yakura, 2002). Boundary objects "have different meanings in different social worlds but their structure is common enough to more than one world to make them recognizable, a means of translation" (Star & Griesemer, 1989, p. 393). Temporal boundary objects are a unique category of boundary objects, because of their narrative quality: with a clear beginning, middle, and end (Yakura, 2002). As a visual artifact they render the abstract phenomenon of time (Adam, 1990) concrete and negotiable for individuals from different groups (Yakura, 2002). Similarly, TADs as visual artifacts make time concrete and allow for different audiences to negotiate time and its meaning. However, unlike temporal boundary objects as defined by Yakura (2002), and studied taking the forms of budgets, planners, and presentations (Davies & McKenzie, 2004; McKenzie & Davies, 2010; Yakura, 2013), TADs do not clearly state a beginning, middle, and end. Although TADs allow for the construction of a narrative, they most often highlight only one particular event without stating the narrative explicitly. More likely, the narrative – and a substantial part of TADs meaning, is imagined by its audience (Barry, 1997). In that sense, we expect TADs to serve as boundary objects conveying symbolic meanings, much more than temporal boundary objects which seem to be more pragmatic and action oriented.

Hence, we argue that the use of TADs is part of an organization's symbolic practices, those aspects of an organization that are used to "reveal and make comprehensible the unconscious feelings, images, and values that are inherent in that organization" (Dandridge, Mitroff, & Joyce, 1980, p. 77). These feelings, images, and values are materialized in the meanings of TADs. That is, TADs come to represent much more than a date stamp. However, the meanings attached to TADs are not necessarily the same across, settings, audiences, and

time. For instance, recall the aforementioned years that have specific meanings for specific audiences (e.g., 1988 for the Dutch), taken out of context and presented to a different audience, that year might lose its meaning as an extraordinary year, or gain a different meaning (e.g., 1988 for the former Soviet Union is the year they lost the finals of the Euro Cup). Similar to other organizational labels, TADs may contribute to a shared understanding of situations, objects, events, etc. (Ashforth & Humphrey, 1997; Donnellon, Gray, & Bougon, 1986). Labels, and TADs, are devices to gain control of, and to understand the social environment (Ashforth & Humphrey, 1997). That is, labels aid the categorization of objects and create a shared meaning framework that facilitates coordination (Ashforth & Humphrey, 1997). However, that does not imply that the meaning of labels, and TADs specifically, is static and robust. The underlying meaning may vary, depending on the needs and goals of organizational decision-makers choosing to use them, the audiences, and the context in which they are used.

Coins, Wine, and Whiskey

TADs, besides being used by organizations in their communication and on artifacts, are almost universally used on coins, wine, and whiskey. Depending on the laws and regulations of the country issuing the coins, the TAD can refer either to the year the coin was minted (e.g., the U.S., Belgium, Spain, and the Netherlands) or the year the coin is issued (e.g., Germany, Greece, and Portugal). Using a year on coins is an ancient practice, dating back to the Roman Empire (Duncan-Jones, 1998; Fulford, 1978), and could have been the inspiration for organizations and logo designers to use the practice of referring to a year in their communications. Coins, before the introduction of newspapers and other media, were one of the few ways in which the government and reigning individuals (e.g., kings, queens, emperors) could communicate with a mass audience (Hekster, 2003, 2007) and note the passage of time (The Royal Mint Bullion, n.d.). Furthermore, dates on coins might have been used to record and control the number of coins minted in a particular period (The Royal Mint Bullion).

In addition, the date on coins in combination with other mint marks would allow a reign to identify the minter of the coin, in case he or she was suspected of foul play (Farhi, 2007). The date on coins also enabled its users to infer the true intrinsic value of the coin – when coins were still made of gold and silver. In years when there was insufficient supply of silver and gold to produce the number of coins needed, a reign could allow debasement, reductions in the silver and gold used in a coin (Rolnick, Velde, & Weber, 1996).

Consequently, coins with the same denomination but minted in different years could have a different intrinsic value. Thus, the year on a coin could be very informative of the true value of the coin. While nowadays the year on coins is not informative of its intrinsic value, for coin collectors the year is still very important. That is because the number of produced coins varies by year, making coins from certain years rarer, and hence more valuable. For instance, the 1943 Lincoln Head Copper Penny which has a face value of one cent, is traded for approximately $10,000 by collectors. At the time of its production, copper was needed for war efforts. Consequently, all coins were made of steel except for a batch that was accidentally created with copper, making them extremely rare, and consequently highly demanded and valuable.

The vintage year on wine and (high-end) whiskey is informative about the underlying characteristics, and sometimes rarity of the product. The vintage year is also telling whether the wine has "come of age" and can be consumed or should be left on the shelves a while longer. For instance, Bordeaux wine when it is young is often unpleasant to drink, but overtime it loses its astringency (Ashenfelter, 2008). Whiskey often includes age statements – a slightly different type of TAD, for instance "12 years old", meaning that the whiskey (or in case of a blend, the youngest whiskey) has matured in the cask for 12 years. The time the whiskey is kept in the barrel is informative of its flavor. Thus, age statements, as used on whiskey, are informative about the production process of the product. However, they are less informative about the actual age of the product, let alone of the organization. To illustrate, a "12 years old" whiskey that is kept in storage for another 10 years, does not have a different age statement. The product might have become rarer and more valuable, but it does not change the intrinsic quality of the product that is signaled with the age statement. Unlike wine, whiskey does not mature in the bottle; its characteristics, flavor, and quality will remain the same – whether the bottle has been kept in storage for 10 years, 50 years, or even a100 years. In that sense, the age statement is an absolute TAD: the aging process stopped when the whiskey was bottled, like time froze.

In addition, the vintage of a wine is important because the local weather and soil conditions during a particular year are important determinants of the quality of the wine (Ashenfelter, 2008). Furthermore, both for wine and whiskey the vintage year will be informative about the rarity of the bottle, and consequently its price. Wine and whiskey are often more expensive for vintage years with low production volume, often caused by a shortage of resources. For wine and whiskey, the year thus denotes a lot of information

pertaining to the quality of the inputs (especially in the case of wine), the quality of the final product as a function of its age, and its rarity.

For coins, wine, and whiskey, the year, whether the vintage or age statement, on the artifact is (or was) telling about the intrinsic value of the product. Although this might not necessarily be the case for organizations (e.g., 2000 is not necessarily a "better year" for organizations than 2001), organizational decision-makers might have applied the references to years on those products, and incorporated them in organizational communication with the purpose to signal more than organizational age. In this sense, TADs may be used by organizations to allude to their underlying values, characteristics, and qualities. Furthermore, although some years might not be "better" for organizations, some years are likely perceived as worse (and consequently often not explicitly communicated). For instance, in Germany few references to years are made by organizations that were founded during the Nazi Regime such as Volkswagen.

Past

In line with time's arrow, the perception of time passing from a past through the present to a future (Eddington, 1928; Hawking, 1988), and Ancona et al.'s (2001) definition of time as flowing in a non-reversible manner from past to future, we divide TADs in three general categories: past TADs, present TADs, and future TADs. Past TADs refer to some date in the past, this can be the distant past (e.g., "est. 1829") or a recent past (e.g., "best business firm 2019") and anything in between. Often, these TADs refer to the date the organization was founded. However, there are also occurrences in which the TAD refers to other key events, for instance the first time a traditional method of production was used. This is for instance the case for Brand, a Dutch beer brewery founded in 1871, which uses claims such as "since 1340". In the 14th century there was a beer brewery in the same region and Brand claims to build on this tradition, even though there is no obvious connection between the brewery from the 14th century and Brand (Cornelissen, 2017). TADs referring to the past can also emphasize awards and recognitions received in the past, or the construction/inauguration of an organization's

Figure 1. Heineken label.

building. For instance, the Italian furniture design and production company Et Al. makes references to winning the Reddot Design Award (won in 2017 and 2020) on its website, Heineken refers to winning Diplome d'Honneur Amsterdam in 1883, Medaille d'or Paris 1875, and Grand Prix Paris 1889 on the label used on beer bottles and cans (see figure 1), and the Swiss chocolate producer Suchard referred in the past to winning the Grand Prix Paris 1900 on postcards, posters, and other merchandise. The accompanying descriptor is commonly informative of the achievement, event, or activity that took place in the referred year. The use of past TADs may facilitate organizational members' planning for the more distant future. According to Bluedorn (2002) the older the organization, the further its members are able to look into the future. That is because organizational members tend to look as far forward as they look back. Consequently, a past TAD that places an explicit temporal boundary on the past also places an implicit temporal boundary on the future. By that, a past TAD creates a temporal horizon into both the past and the future for the collective organization and its audiences, beyond any individual's temporal horizon that is bound to his or her individual experiences and expectations (Flaherty, 2002; Noyes, 1980).

Furthermore, a TAD ensures that all organizational members are cognizant of the same temporal boundary in the past. That is especially important when the temporal boundary is ambiguous or debatable, for instance in the case of acquisitions and mergers. When two organizations merge, or one acquires another, the "date of firm establishment" becomes less obvious: is it the founding date of the larger or acquiring firm; the date of the oldest or youngest firm; or the date of the merger or acquisition? A TAD may then help resolve confusion and debate and bring clarity and possibly cohesion. An example of an organization that decided to use the date of the oldest partner in the merger as its "founding" year is the University of Modena and Reggio Emilia (Gioia, Corley, & Fabbri, 2002), which refers to the year 1175 as the year of establishment in its logo. Although Modena is indeed a very old university, Reggio Emilia was only granted university status after the merger in 1998 (Gioia et al., 2002). In that sense, 1998 would have been a more accurate year of "establishment". This example also highlights that history is not necessarily an accurate representation of the past, but rather a narrative constructed to suit the organization's present and future needs (Suddaby et al., 2010).

Past TADs explicitly marking a past temporal boundary and facilitating a shared temporal horizon for organizations and their audiences is closely aligned with Yakura's (2002) conceptualization of temporal boundary objects. Although timelines are more explicit and detailed in the narrative constructed as a temporal boundary object, past TADs construct an

explicit beginning, and evoke a middle that has partially taken place and is partially expected, and an imaginary end. The middle evoked by past TADs is the experienced past, the present, and the expectations set for the future. However, whereas timelines have an end, although timelines are notorious for having to be adjusted over time, the imaginary end evoked by past TADs is continuously shifting, depending on the moment in time in which the past TAD is being evaluated. In other words, the meaning of the TAD and what it evokes is being constructed, re-constructed, and experienced in time, like an ongoing present (Hernes & Schultz, 2020; Schultz & Hernes, 2013).

Furthermore, a past TAD marks an organizational achievement that is regarded as "extraordinary" in the eyes of an organization and/or its audiences. The aforementioned claim builds on the premise that anything explicitly marked represents extremes that are either remarkably 'above' or 'below' the norm (Brekhus, 1998; Zerubavel, 2018). For instance, a TAD might signal the organization's longevity and its stability and continuity over time. The organization's ability to have survived for a long time, in the case of distant past TADs, highlights its above average performance. Being old or the oldest – indicated by a TAD – does not necessarily make an organization the best in what it does and delivers. Such a TAD does indicate however, that the organization has been performing well enough to survive.

Although it is by mere assumption that past TADs are perceived to indicate tradition, historicity, and authenticity, audiences seem to attach all kinds of qualities and characteristics to an organization's age. Pecot and De Barnier's (2017) study in which they interview consumers about organizations' use of historical references – what we call past TADs, highlights that audience members make such conjectures. They found that historical references are associated with organizations being perceived as less industrial and more artisanal, adhering to tradition passed on over generations of workers, and using traditional methods of production, among other things. Although that may be true, nothing in the TAD itself indicates this to be the case. On the contrary, it is much more likely that these organizations do not produce in the same manner as they did when they were founded – if they would, it would likely indicate that the organization is inefficient and outdated and it would not have survived. If they do use a similar production process, that is often highlighted separately, or only applies to part of the product range. For instance, Heineken (figure 1) makes the claim "traditioneel recept" ("traditional recipe"), to highlight its adherence to tradition. Yet, the production process itself has changed considerably since its founding in 1873. Although the inferences made based on past TADs might be questioned for their accuracy, these inferences do indicate that TADs carry meaning beyond indicating age.

Past TADs can be part of an organization's strategic use of its history, when the past is seen as a source of distinctiveness and competitive advantage (Foster, Coraiola, Suddaby, Kroezen, & Chandler, 2017; Suddaby et al., 2010). When past TADs are strategically used, they often emphasize those aspects that are difficult to imitate by competitors because they are derived from the organization's specific past. For instance, when the organization was the first of its kind, which cannot be copied. An example is the first Scottish *legal* whiskey distillery Glenlivet, founded in 1824[4]. In their tasting room, they highlight this history, and its strategic value with the claim "Who cares who came second?" (see figure 2). A long history is difficult to copy and the founding conditions of organizations can leave a lasting imprint that is non-substitutable (Stinchcombe, 1965), all the more reason for organizational decision-makers to highlight their unique history, possibly with a TAD.

Figure 2. Wall decoration at the Glenlivet distillery.

Present[5]

Present TADs have a reference to the present, for instance "since 2020", or "anno now". These TADs do not signal longevity or survivability, but rather beginnings, newness, and being current. Hence, the question arises why organizations would choose to explicitly highlight/communicate the present via TADs and what these TADs may elicit in audiences.

Like past TADs, present TADs may communicate an organization's authenticity to its audiences. Authenticity is an organization's quality to be original, genuine, true, honest, or real (Beverland & Farrelly, 2010; Carroll, 2015; Potter, 2011). Consequently, different dimensions can contribute to impressions of authenticity, some of which rely on an organization's proven track record, history, or heritage accumulated over time (Beverland,

[4] The example of Glenlivet highlights that an organization can claim to be the "oldest" on different dimensions. Indeed, Scottish whiskey distilleries that claim to be older are Glenturret (origins around 1763), Bowmore (late 1770s), and Balblair (around1790) to name just a few. Yet, Glenlivet claims to be the first to produce whiskey legally, whereas the others were producing whiskey illegally.

[5] In a strict sense, the present is fleeting and gone without experiencing it. That is, 'now' is the past in less than a second. However, we are arguing that the present is more a livid experience and socially constructed, than the present in an absolute measurable, or natural sense. Consequently, the experience of and associations with the present are an ongoing process of construction (Hernes & Schultz, 2020; Schultz & Hernes, 2013). Hence, the present can be conceptualized as a brief period of time both extending back and forth in time around the now, also called the broad present (Gumbrecht, 2014; Zimbardo & Boyd, 1999).

2005; Zundel, Holt, & Popp, 2016) that can be expressed using past TADs. Yet other dimensions and conceptualizations of authenticity can be managed without any past grounding, for instance, signaling (Beverland, 2006) or showing the method of production (Carroll & Wheaton, 2009; Podolny & Hill-Popper, 2004), the importance of craftsmanship and sincerity (Beverland, 2006; Carroll & Swaminathan, 2000; Leigh, Peters, & Shelton, 2006; Napoli, Dickinson, Beverland, & Farrelly, 2014; Sagiv, Simons, & Drori, 2020), downplaying commercial motives (Beverland, 2006), or relating to a specific place (Beverland, 2006; Napoli et al., 2014). Some of these expressions of authenticity can be signaled by using present TADs, as present TADs show that the organization is genuine and sincere about its novelty and originality.

In addition, a present TAD can also signal an organization's temporality, rarity, and scarcity if it indicates that the organization is here at the present time but will not continue to exist in the future. For instance, in the case of pop-up stores and restaurants. The rarity and limited accessibility often justify price premiums and spark audiences' attention (Barone & Roy, 2010; Hennigs, Wiedmann, & Klarmann, 2012). According to the "scarcity principle", consumers' preferences for a product increase if the product is scarce (Brock, 1968). The scarcity principle might hold for organizations as well and a present TAD might serve as a scarcity signal. Furthermore, a present TAD can communicate with an audience that strives to live in the here and now or support small and young ventures. Present TADs may help these audiences to identify the ventures they are eager to support and identify with.

Explicitly communicating young age can also diminish concerns about the organization's lack of reviews, testimonies, or track record. It highlights that the organization has not yet had the time to accumulate these. Especially in the time of social media, with Google ratings, Facebook reviews, TripAdvisor, etc., reviews are becoming increasingly important and accessible to a wider audience. However, social media are not the only media that present reviews, or a lack thereof. Since TADs might also be used to communicate awards won, having a present TAD signaling the organization's newness also excuses the organization for not having won any awards, yet. In addition, present TADs become past TADs over time and the organization's decision-makers may recognize and anticipate the value of a present TAD in the future, when we would categorize it as a past TAD. In that sense, organizational decision makers envision a future and a past, creating (once more) a temporal horizon.

An example of the use of a present TAD is by "Brick" a restaurant and bar in the center of Tilburg (NL). They use the claim "est 2020" in their logo (see figure 3) and on the entrance door. Another example is the firm "Anno nu" ("this year"), a twenty-year-old financial consultancy firm, that promises its (prospective) clients, up-to-date solutions and advice[6].

Figure 3. Logo Brick.

Future

These TADs refer to a time in the future. An example is Horizon2020, the European Research and Innovation program for the years 2014-2020. "2020" was included in the name of the program at its inception, in 2014. Here the TAD highlights the end year of the program, instead of past and present TADs that often indicate beginnings. Another example is Cape Town's Defeat Day Zero civic campaign to preserve water (see figure 4). Day Zero was a constantly adjusted day in the future that the city was predicted to run out of water[7]. Alongside other measures and the overall campaigns rhetoric, "Day Zero" may have nudged residents to use less tap water (Bonthuys, 2019; Booysen, Visser, & Burger, 2019; Walwema, 2020). Through the effective change in habits of the entire city population, the day was postponed indefinitely, for the time being.

Noteworthy about the TADs used in Horizon2020 and the "Day Zero" campaign and future TADs in general, is that they often indicate an end, rather than a beginning which is frequently referenced by past and present TADs. Although future TADs can also refer to beginnings, for instance "to be opened Summer '21", which informs audiences about what to expect, those that refer to endings often symbolize more complex meanings. These future TADs often indicate what should be achieved or avoided by a given date, such as new research outcomes advancing Europe, or saving enough water to avoid a national disaster.

Future TADs indicating an end are often used by temporary, project organizations and programs. For instance, in the construction industry where the estimated date of completion is

[6] See their website: www.annonu.nl
[7] https://www.biznews.com/good-hope-project/2019/04/08/cape-town-day-zero-partnership
https://www.citylab.com/environment/2019/04/cape-town-water-conservation-south-africa-drought/587011/
https://www.nytimes.com/2018/01/30/world/africa/cape-town-day-zero.html
https://www.defeatdayzero.co.za/#updates

often explicitly communicated. Future TADs not only communicate a commitment to a project and the project partners, but also to other audiences, for instance investors in the project, those who purchased real estate or plan on using the constructed property, surrounding residents that might experience hindrance of the project work, and governments. Furthermore, a common characteristic of such project teams is that the project partners do not share an uninterrupted history together and although they might decide to work on other projects in the future, this is not a given. The partners do know, however, that they will be working on the specific project together and consequently can imagine the course of the project and its end. As such, future TADs may be the embodiment of thinking in the future perfect tense (Gioia et al., 2002; Weick, 1979), as if the events and actions yet to transpire already took place. These events and actions become more meaningful as they are treated as finished events in the past (Weick, 1988), which is done by thinking in the future perfect tense. Future TADs are helpful tools in prospective sense-making (Weick, 1995), and can aid the group's understanding of what needs to happen, even though changes in their plans will occur (Yakura, 2002). Furthermore the visualization of an end point serves as a motivational device, both aligning individuals' efforts and lifting group spirit (Yakura, 2002).

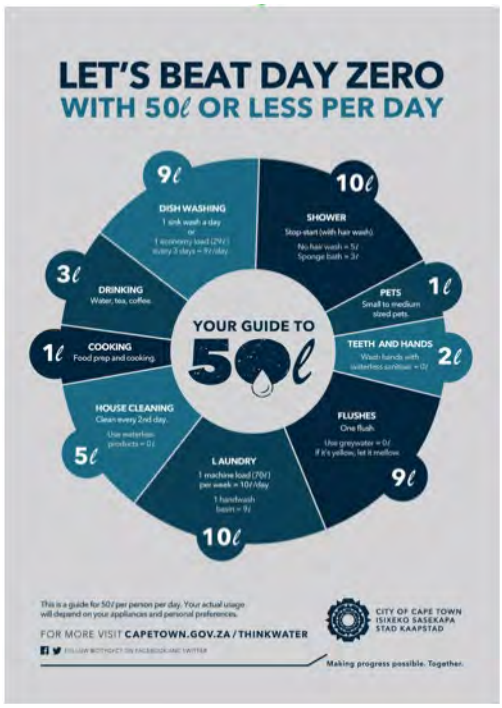

Figure 4. Defeat Day Zero campaign poster.

Future TADs as the embodiment of "future perfect thinking" highlight that sense is made of events, behaviors, and organizations retrospectively. However, scholars have argued that sensemaking can be projective and prospective as well (Gephart et al., 2010), and as such the future is taking shape in the now (Kaplan & Orlikowski, 2013). TADs that are symbolizing the projective and prospective sensemaking, can visualize a common goal to work towards. Organizations that use future TADs often lack a shared history, but they envision, albeit a finite, shared future. Visualizing a goal or strategy increases individuals' motivation and, consequently, the likelihood the goal will be achieved and that the strategy will be fulfilled (Davis, 1990; Vasquez & Buehler, 2007). In addition, future TADs might emphasize abstract common goals, allowing differences in individual interpretations and ambiguity, facilitating coordination and increasing the likelihood of goal attainment (Eisenberg, 1984). Future

TADs may also align the future temporal horizons of different audiences, and an envisioned past temporal horizon (once the goals have been achieved).

Noteworthy is that both future and present TADs, become present and past TADs overtime. Hence, whether a TAD is a present or (near or distant) future TAD depends on the temporal context in which it is being observed and evaluated. This is for instance the case for Horizon2020, once it was a future TAD, at time of writing it is a present TAD, and next year it will be a TAD belonging to the past. Past TADs, although they can be recent or more distant, will not become present or future TADs because of the linear progress in the Gregorian Calendar and time. Thus, the underlying meaning of a TAD depends on the context in which it is observed. Take for example "Day Zero", when it was first used in Cape Town it represented a doomsday, a day that should be avoided. Since the residents and city were successful in avoiding "Day Zero", it has come to represent a successful collective effort.

A potential fourth distinct and special type of TADs are those that refer to time in general. With that we mean indications of time that are not necessarily grounded in the past, present, nor future. For instance, the use of digital and analogue clocks, speedometers, timers, calendars, agendas, etc. Although these are clearly referencing time, they are not referencing a specific time period. They can be instrumental, for instance, when speed, accuracy, and planning is important to be signaled to audiences. Hence, we can group these TADs under the category of time planners or measures.

However, time measurement and planning differ from past, present, and future TADs as time in the former is conceptualized more as a resource, while in the case of TADs time is a reference. As a resource, time can be bought, spent, and used (Ancona et al., 2001; Usunier, 1991, 2003). As a reference, time is independent of the organizations' plans and behavior, it passes by continuously (Yakura, 2002). Time as a reference has meaning including but not limited to monetary value. Time as a resource, as in planning and scheduling devices, seems to function primarily as a control and structuration device, for instance, in budgets, strategic plans, mission and vision statements. Although it would be interesting to study how time as resource and time as reference relate and might even be nested in one another, that is beyond the scope of this thesis. Here, we focus on the limited, but complex and rich in meaning, functions, and purposes, set of past, present, and future TADs.

TADS' USAGES

In the previous sections we already alluded to the different meanings TADs may represent, based on whether they refer to the past, the present, or the future. In this section we focus on the functions TADs may fulfill and when they are likely to be used by organizations. We argue for two overarching, albeit not independent, usages of TADs: creating, maintaining, and reinforcing organizational identity, and creating a sense of continuity and stability during uncertainty and change.

Organizational Identity

TADs are consciously used by organizations to communicate some underlying characteristics, features, or values to their audiences. Organizations' use of TADs, instead of foregoing references to time, means that organizational decision-makers find it worthwhile to mark a particular time in the organization's past, present, or future in their communication. Organizational decision-makers, and humans in general, mark what they perceive to be special or extraordinary (Brekhus, 1998; Zerubavel, 2018). By marking time, with the use of TADs, a particular time is foregrounded as exceptional, relative to unmarked times (Brekhus, 1998). A prominent use of these marked times we argue is to create, maintain, and reinforce organizational identity.

Organizational identity constitutes those aspects of the organization that its members deem central, enduring, and distinctive (Albert & Whetten, 1985). Identity can be observed in identity claims and labels that are robust to change, although over time and depending on the needs of the organization, the meaning and what these claims and labels represent can change (Gioia, Schultz, & Corley, 2000). Hence, one usage of TADs is to serve as identity claims. For instance, past TADs can emphasize the unique and shared past, not only reaffirming group boundaries (Bell, 2012), but highlighting those aspects of the organizational identity that are unique and distinctive as they are grounded in the organization's past (Dutton & Dukerich, 1991; Kroezen & Heugens, 2012; Marquis & Tilcsik, 2013; Stinchcombe, 1965), as illustrated by the example of the Glenlivet distillery. Especially for old organizations, past TADs might highlight their uniqueness if it signals their scarcity (Brock, 1968; Van Herpen, Pieters, & Zeelenberg, 2014). When they are the oldest organization in their field, or at least one of the few old organizations in the field.

However, organizations have the choice to use a particular year, which does not necessarily need to be related to the founding of the organization, as the example of the Dutch beer brewery Brand illustrates. Another example of an organization with a distinctive

history that contributed to its success is Coca-Cola (see figure 5). Coca-Cola has a history that predates the founding of the organization. It was in 1886, the year used in TADs, that the doctor and pharmacist John Smith Pemberton created the recipe for Coca-Cola. He sold the recipe to Asa Griggs Candler in 1888, who established the company Coca-Cola in 1892. Hence, care is required when interpreting past TADs as reflecting factual statements about the organization, and its scarcity, because the indicated year may not accurately reflect an organization's founding year. That is so despite the likelihood that at a first glance audiences may interpret past TADs as such due to the habit of doing so and/or lack of detailed information about the organization's history.

Furthermore, TADs can explicitly communicate the 'enduring' aspect of organizational identity, by highlighting either its beginning, formative key events during its life cycle, or end. Interestingly, the enduring aspects in an organization's identity are often regarded to be timeless (e.g., Gasparin & Neyland, 2018; Ravasi, Rindova, & Stigliani, 2019; Schultz & Hernes, 2013), yet by communicating them with TADs they become embedded in time. Hence, TADs may also be used in a playful manner by organizations, for instance newly founded barbershops that use a vintage or old-fashioned style but include a present or future TAD. Or, organizations that want to be seen as timeless, but evoke the use of TADs, for instance Iittala's claim "timeless design since 1881".

Figure 5. Coca-Cola can.

Because TADs appear to be subtle and brief, they are also ambiguous, allowing for multiple interpretations. This ambiguity and equivocality enable coordination, resulting in consensus (Eisenberg, 1984), and unification of internal and external discourses and narratives. In this sense, identity, image, and reputation can be unified (Ashforth & Humphrey, 1997; Ashforth & Mael, 1989; Goffman, 1969) as all three might rely on the same TAD, even though the audiences of the organization's identity, image, and reputation might associate different meanings with the TAD used. For instance, "since 1886" used by Coca-Cola is a claim to its legitimacy and might aid the creation and maintenance of its reputation for external audiences. That is, if we assume legitimacy to be an organizational property that is accumulated over time (Bitektine, 2011; Suddaby, Bitektine, & Haack, 2017). For organizational members, it can indicate the longevity of the organization and the generations of workers that preceded them. The TAD, especially in combination with the claim "original taste" might also create the image of the organization's and product's authenticity and reliability.

However, not only TADs referring to the past, and consequently history, can serve to create, maintain, and reinforce organizational identity. Past, present, and future TADs carve out a particular date or period in the continuous flow of time that an organization chooses to identify with and claims to be its own unique and special time. Recall for instance the aforementioned example of Bricks, that makes a reference to the present. For Bricks, 2020 is unique and indicates the (difficult) start of the organization and future. Furthermore, because TADs are ambiguous and subject to individuals' interpretations, they are particularly suited to articulate organizational characteristics that are difficult to express using words (Oswick & Montgomery, 1999). For instance, authenticity is a characteristic that can be central to the organization's identity, yet difficult to parsimoniously communicate to audiences. As mentioned above, authenticity is the perception of the organization being original, genuine, true, honest, or real (Beverland & Farrelly, 2010; Carroll, 2015; Potter, 2011), which due to the ambiguity and complexity that are embedded in what it means to be authentic, is difficult to communicate to a wide and varied audience in a parsimonious manner. Yet, studies have shown that organizations were able to communicate their authenticity by using historical and cultural references (Beverland, 2005, 2006), even when an audience has limited knowledge about the referenced history (Freathy & Thomas, 2015), by linking the organization to a place and tradition, and using pictures of craftspeople (Beverland, Lindgreen, & Vink, 2008). But because authenticity does not necessarily need to be grounded in the past, a present or future TAD can also communicate an organization's authenticity.

Furthermore, TADs can serve to connect past, present, and future. By that, TADs can highlight what is enduring, or intended to be enduring about the organization. For instance, the founding values of a new organization can be signaled with a present TAD, or the common goal and vision with a future TAD. Furthermore, past TADs can serve as heritage artifacts, symbolizing a set of institutionalized ideas and practices, from the past, that are being brought into the present and carried on into the future to sustain identity, shared values, and social structures (Balmer, 2011; Colombero & Boxenbaum, 2019; Schultz & Hernes, 2013, 2019). Present TADs can connect the present to the aspirations for the future and overtime become past TADs. Future TADs are embodiments of "thinking in the future perfect tense" and bring the unpredictable and uncertain future into the present.

TADs create these intertemporal connections by visually preserving the organization's past, present, or future. Visual representations of the past enable communication (Zerubavel, 1996) and identity formation in the present, allowing organizations to create an understanding of the current circumstances and envision their future (Bell, 2012). Past TADs, if they are

related to tradition, further intertemporal connections between the past, present, and future. According to Hobsbawm (1983), traditions are socio-cultural practices that rely on the past as a source for authority and inspiration, legitimizing the existence of these practices. As such, traditions bind together social entities, like organizations, through the different dimensions of time to create a continuous and legitimate identity (Shoham, 2011). In a similar vein, present and future TADs may preserve the present and imagined future, respectively. The present is fleeting and becomes the past rapidly but might be preserved longer in a TAD. That is, a present TAD might hold on to the "present" for as long as the period referred to will last. For instance, "2020" can be regarded the present for 12 months, "January 2020" for one month, and "January 1, 2020" for one day. Yet, for organizational members, like the owners of Bricks, 2020 might refer rather soon to the past (e.g., the day they got the keys to the property). That is, a TAD that is a present TAD for external audiences, may be viewed as a past TAD by internal audiences, moments after is has been used. Furthermore, a present TAD might have served as a future TAD before (external) audiences could observe it. Founders might have envisioned the organization, years before it was established. This emphasizes the multiple ways in which a TAD can be interpreted by different audiences. The future is visually preserved as an expectation and desirable image, imagined to have taken place through future perfect thinking (e.g.., Davis, 1990; Gioia et al., 2002; Weick, 1988). By explicitly referencing to present or future, by using TADs, the present and future are not only preserved but might also become central and distinctive markers of organizational identity.

TADs can also facilitate redefining and contesting the history on which an identity is built. A specific strategic use of past TADs might be to reframe history and by that, reinterpret the present and re-envision the future. Historical narratives are dominated by the powerful winners and survivors, often recalled inaccurately, and less nuanced than the actual events that transpired (Denis & Dlamini, 2015; El Sawy, Gomes, & Gonzalez, 1986). Organizational decision-makers, to some extent, can re-create history by emphasizing some parts of history while forgetting other events that transpired (Anteby & Molnar, 2012; Booth, Clark, Delahaye, Procter, & Rowlinson, 2007; Brunninge, 2009; Foster et al., 2017; Hatch & Schultz, 2017; Rowlinson & Hassard, 1993; Suddaby et al., 2010). The shift in an organization's and society's needs, values, and sentiment may call for redefining history. A history that once was valued, might have lost its value, or become contested and a burden. In these instances, past TADs might be evoked to redefine or reclaim history. An example is

The New York Times Magazine's "the 1619 project"[8]. In this project the United States' founding date 1776 (the year of the declaration of independence) is contested, and instead 1619 is suggested as the nation's year of origins. In 1619, the first ship with enslaved Africans arrived to the shores of the current U.S. Choosing 1619 as the founding year places slavery and its consequences at the heart of who the USA was, is, and might be as a country. Or, as the editor in chief, Jake Silverstein (2019) states "By acknowledging this shameful history, by trying hard to understand its powerful influence on the present we can prepare ourselves for a more just future". Here the TAD aids the acknowledgment of history, as an explicit reminder of a horrible period that is so defining for the nation's past, present, and future.

In summary, TADs might aid the organization in (re)creating, maintaining, and reinforcing its identity. Past TADs evoke its history and past, which can be a source of distinctiveness. However, present and future TADs can also refer to central and distinctive characteristics of the organization. TADs can create intertemporal connections between past, present, and future, and as such emphasize the enduring aspects of the organization.

Continuity & Stability

Time is one of the few elements that humans will not be able to fully control (Eddington, 1928; Hawking, 1988), and in that sense, humans can only live with and in it, but not change it nor ignore it. Along its uncontrollability arises a sense of uncertainty that is difficult to manage and master. For instance, where companies can stock an inventory to ensure that production continues when a sudden decrease in raw materials occurs, or individuals can save money for unforeseen expenses, time cannot be "stocked" or "saved" for those times in the future when it is needed. For organizations, time can be "bought", for instance by paying an hourly wage to employees in exchange for their time (Zerubavel, 1979). In some cases, individuals can prolong their lives with treatments and medication, and thus prolong their "time". Yet, neither for organizations nor for individuals, the time "bought" is qualitatively the same as the time spent. Time is an unusual (organizational) resource (Ancona et al., 2001; Usunier, 1991, 2003) because it cannot be amassed and has a

[8]The 1619 project intends to recreate the history of the United States by acknowledging the arrival of the first slaves as a founding event. The project has received much praise, by for instance Rolling Stone (https://www.rollingstone.com/politics/political-commentary/1619-project-critics-874781/) and the project creator, Nikole Hannah-Jones received the 2020 Pulitzer Prize for Commentary. However, it has received criticism as well (https://www.theatlantic.com/ideas/archive/2019/12/historians-clash-1619-project/604093/), showing how powerful and shaping events can be contested, but also the deeper meanings that are embedded in TADs.

qualitative component to it. Hence, a human tendency to focus on controlling or freezing time when faced with uncertainty, threats, and instability is only logical.

TADs, like all other efforts to stop and control time, cannot eliminate uncertainty, threats, or instability associated with time. However, they can function as anchors (Furnham & Boo, 2011; Gongaware, 2010; Tversky & Kahneman, 1974) and reference points (Yakura, 2002), creating a sense of continuity and stability, during periods of change and uncertainty. In that sense, objectively TADs do not eliminate, yet they mitigate the consequences of uncertainty, threats, and instability, by subjectively creating a sense of stability, certainty, and continuity. The act of explicitly marking a particular time, exaggerates the importance and distinctiveness of the marked and the attention given to the marked (Brekhus, 1998). Consequently, the unmarked – or the instability, uncertainty, and change – gain less attention and consequently might seem less severe. In this sense, TADs allow for a redirection of attention and focus on an anchor for stability, whether that anchor is relating to the past, present, or future.

Furthermore, during periods of uncertainty and/or change, TADs can symbolize those organizational aspects that are stable, whether it is the focus on the future, a grounding in the present, or highlighting the survivability and longevity of the organization. Hence, all TADs might be evoked during uncertainty and/or change – as each can serve as an anchor. However, it will be more likely that past TADs will be evoked when faced with change and uncertainty, due to human tendency to look into the past during times of insecurity and threat (Sarial-Abi, Vohs, Hamilton, & Ulqinaku, 2017).

In the study by Sarial-Abi et al. (2017) it is argued that when people experience threat, they long for intertemporal connections – seeing the past, present, and future as being closely tied together. These intertemporal connections serve as a way to maintain meaning frameworks (Heine, Proulx, & Vohs, 2006), hence a sense of stability and understanding. These meaning frameworks summarize the relationship between beliefs about the world and between these beliefs and the self, and how individuals make sense of the self and these beliefs (Heine et al., 2006). For instance, these meaning frameworks aid the construction of expectations and categorization when people experience novel situations. When the meaning framework is threatened, for instance by disruptive events, people find comfort in the past (Sarial-Abi et al., 2017).

To expand the arguments by Sarial-Abi et al. (2017), if intertemporal connections serve to maintain meaning frameworks, the same comfort the past offers can be found in the present, or future. Especially if the future is imagined as already experienced and taken place,

in the case of future perfect thinking (Weick, 1988, 1995), similar intertemporal connections can be formed when using a prospective vision of the future, preventing the loss of the meaning framework. Furthermore, independent of past, present, and future each year can have a significant meaning – depending on its audience. In that sense, a present or future TAD such as "since 2020" might be more of an anchor for the founders of a new organization, than "since 1903", when they were not even born. Hence, we propose that TADs, whether referring to the past, present or future, can capture the intertemporal connection needed to maintain the established meaning framework.

These intertemporal connections, symbolized in TADs, create a sense of stability (Foster et al., 2017; Rose, Merchant, Orth, & Horstmann, 2016). The creation of a sense of stability and continuity by TADs might be helpful if uncertainty is caused by a necessary organizational change. For instance, future TADs can be useful in the construction of a positive narrative about the change to come and past TADs might be used to emphasize the changes the organization faced in the past and has survived. Furthermore, by highlighting a clear vision, with an explicit time horizon (e.g., a future TAD) can aid change, as it visualizes the future in a manner people can relate to (Gioia & Thomas, 1996; Vasquez & Buehler, 2007) and make sense of (Weick, 1995; Yakura, 2002).

DISCUSSION

In this essay we shed light on the ubiquitous, but understudied phenomenon we call temporal anchoring devices. We made a distinction between three categories of TADs: past, present, and future, noting that this distinction is dynamic such that future TADs become present TADs and present TADs become past TADs. This distinction highlights the origins of commonly used TADs in the Gregorian Calendar, and the linearity in the passing of time in the calendar as a time reckoning device (e.g., Adam, 1990; Ancona et al., 2001; Yakura, 2002; Zerubavel, 1977, 1985, 1987). We explored where the organizational practice to use TADs might stem from and noted three forms in which TADs are often used: on coins, wine, and whiskey. In all three appearances, TADs are or were telling about the intrinsic value of the object or product. Although we do not claim that TADs are telling about the intrinsic value of an organization, the use of years on coins, wine, and whiskey may have been a source of inspiration for organizational decision-makers and designers to incorporate TADs in organizational communication. As such, TADs symbolize more than the age of an organization, and can highlight organizational values, history, authenticity, rarity and exclusivity, shared future, and anticipated ending. In addition, that TADs can carry such

meaning might stem from the almost universal institution that is at the foundation of many TADs: the Gregorian calendar.

We further highlighted two uses of TADs: the (re-)creation, maintenance, and communication of organizational identity and creating a sense of stability and continuity. TADs can highlight what is distinctive, enduring, and central about the organization (Albert & Whetten, 1985). TADs can aid in the establishment and re-affirmation of group boundaries, for instance in the celebration of organizational anniversaries (Johnston, 1991). Furthermore, TADs can ground the organization in a specific time period – past, present, or future – when facing organizational or environmental change and uncertainty, creating a sense of stability and continuity.

However, we imagine that there might be other uses of TADs, some that have been alluded to in prior research. For instance, past TADs might increase consumers' perception of an organization's quality and authenticity (Pecot & De Barnier, 2017), and consequently lead to an increase in firm performance. Future research may investigate the conditions under which TADs, and what kind of TADs, are beneficial for an organization. For instance, for chocolate producers a past TAD might be beneficial (Pecot et al., 2018) as the industry is associated with tradition and history. Similarly, banks and other financial institutions might benefit from emphasizing their old age to create legitimacy (Suddaby et al., 2010) – as stability and continuity is very important in this sector. However, if a TAD highlights the connection to a contested past, it might do more harm than good. For instance, organizations with a history in slave trade or the use of child labor, or organizations that faced internal misbehavior and/or fraud. In addition, it would be interesting to study how TADs gain different meanings over the lifespans of organizations. We already noted that TADs shift over time, future TADs become present TADs and present TADs become past TADs. Although, a TAD that became a past TAD may still carry the same meaning as when it was used as a present TAD, its meaning may also shift over time and depending on the focal audience. Prior studies on identity labels (e.g., Gioia et al., 2000), historical references (e.g., Hatch & Schultz, 2017), and organizational history (e.g., Brunninge, 2009; Foster et al., 2017; Suddaby et al., 2010) argued and have shown how the seemingly same label, reference, or past events are re-interpreted and gain or are attributed different meanings over time, depending on the evaluative audiences and organization's needs and goals. We believe that the same applies to TADs: the seemingly same TAD can have a completely different meaning depending on who is using it, how it is being used, and who its interpreter is. In this thesis we are starting to investigate how TADs' meanings vary, mainly in chapter three and

of symbols more generally in chapter two as well, future research should further explore this question to enhance our in-depth understanding of TADs.

Furthermore, future research should systematically identify drivers for organizational decision-makers to use TADs, abstain from its use, or discontinue its use. Although over the course of this research project we have talked to several business owners and asked them why they use TADs, more in-depth research is needed. Such research might further highlight when organizational decision-makers deem it important to use TADs and the meaning they hope to convey. In a similar way, future research can focus on how organizational members and external audiences interpret TADs. In combination, such research would allow to study the intended and perceived meanings underlying TADs.

A last recommendation is to study the use of TADs on a large scale, crossing cultural, religious, and language boundaries. As we have emphasized, we believe TADs to be a ubiquitous phenomenon. However, this is based on non-systematic observations. Members of certain organizational fields might be more prone to use TADs, as do organizations in certain countries. A large, cross-contextual study would help to flesh out the differences in the uses of TADs and what kind of TADs, shedding light on those contingencies that are increasing or decreasing its use. We will return to the implications and future research opportunities in the concluding chapter of this dissertation.

CONCLUSION

This essay and first chapter of the PhD thesis "It's about time: Essays on temporal anchoring devices" introduced the different types and uses of TADs. We explored TADs' foundation in time reckoning and reviewed studies on time in organization studies. We identified three common uses of TADs on coins, wine, and whiskey in our quest to find the origins of organization's use of TADs. We argued that TADs carry meaning beyond indicating age, or history. Yet, an overarching research question remains: *How do TADs serve organizations' meaning making?* In the next chapters of this thesis we will contribute to answering this question. We will shed light on how TADs are used in organizational fields (chapter 2) and by organizations (chapter 3). We also explore how TADs are interpreted by external audiences (chapter 4). As such, we focus on what the meanings, but also purposes, of TADs are. The overarching question places TADs in a much larger system of meaning making and 'meaning makers', such as (temporal) boundary objects (e.g., Davies & McKenzie, 2004; Star & Griesemer, 1989; Stjerne & Svejenova, 2016; Yakura, 2002), history and historical references (e.g., Blombäck & Brunninge, 2009; Brunninge, 2009; El

Sawy et al., 1986; Foster et al., 2017; Hatch & Schultz, 2017; Suddaby et al., 2010), identity labels (e.g., Gioia et al., 2000), logos (e.g., Drori, Delmestri, & Oberg, 2016; Foroudi, Melewar, & Gupta, 2017; Heilbrunn, 1997; Oberg, Drori, & Delmestri, 2017), names (e.g., Fombrun & Shanley, 1990; Glynn & Abzug, 2002; Glynn & Marquis, 2006), and symbols (e.g., Douglas, 1982; Gagliardi, 1990; Glynn, 2000; Rafaeli & Worline, 2000; Schultz, Hatch, & Ciccolella, 2006; Scott, 1995b; Vaughn, 1995).

In chapter two this broader system is recognized as not only TADs are studied, but other meaning makers that contribute to the visual identity of organizational fields. In this chapter we explore the use of symbols in a study at the macro level of three organizational fields. We found that some symbols are more prone to cross organizational field boundaries, establishing 'symbolic bridges' between fields. In the third chapter we move to the meso-level and study how three chocolate producers use TADs over the course of their (nearly) 200-year lifespans. In the third chapter we focus on the different forms and purposes of TADs, some of which we also observed in the study reported in chapter two, and when these organizations use, abstain from the use, or discontinued the use of TADs. In the fourth chapter we turn to the micro level and study whether individuals observe TADs and how this affects their perception of the organization that uses them. In the empirical chapters we study TADs at different levels of analysis; macro, meso, and micro. These different levels of analysis allow us to study how TADs appear, are used, and are interpreted and informs how they serve meaning making. In the fifth and last chapter, we briefly reflect on the studies done and mention future research implications. We provide an answer to the overarching research question. Lastly, during the years that the research reported in this thesis was conducted, we have c created an extensive collection of examples of TADs, some of which are available in Appendix I "Temporal Anchoring Devices: The Collection".

SYMBOLIC BRIDGES AND FALSE FRIENDS: WHEN SYMBOLS CROSS ORGANIZATIONAL FIELD BOUNDARIES

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Abstract

To investigate organizational fields' differences and similarities in meaning frameworks, we conducted a cross-sectional study of the symbols used in three organizational fields – health care, software, and organic food – in Germany. Using a web crawler, we reconstructed the three fields and collected the logos of a sample of the fields' members. We not only show that organizational fields differ, resulting in each field's unique collective identity and mostly impermeable field boundaries, but also that some symbolic elements can cross field boundaries. Specifically, we observed elements that are used in all three fields, derived from a shared wider institutional environment such as nationality and culture, as well as, interestingly, some symbolic elements that are used in only two fields. Based on these results, we make a distinction between those elements that cross boundaries and have a similar meaning in two fields, fulfilling the function of *symbolic bridges*, and elements that appear to be similar but have significantly different meanings in both fields, constituting *false friends*.

INTRODUCTION

Organizational fields have fascinated scholars of organizational theory for quite some time. Scholars have paid considerable attention to their symbolic boundaries and what defines being a member of a field (e.g., Glynn & Abzug, 2002; Lamont & Molnár, 2002; Suddaby, Cooper, & Greenwood, 2007; Weber, Heinze, & DeSoucey, 2008), noting that in mature (Fligstein & McAdam, 2012; O'Sullivan & O'Dwyer, 2015) or settled fields (Zietsma, Groenewegen, Logue, & Hinings, 2017) members have come to agree on the field's meaning and symbolic boundaries. A field's symbolic boundaries emerge from the shared meaning framework of its members, and facilitates the categorization of organizations in different and distinct groups (Grodal, 2018; Lamont & Molnár, 2002). When the symbolic boundaries have been formed and agreed upon, members will engage in behaviors to maintain them and to prevent contestation over the boundaries' contours – thereby protecting the field's collective identity (Glynn, 2008; Lamont & Fournier, 1992; Wry, Lounsbury, & Glynn, 2011) and allowing for collective identification (Zietsma & Lawrence, 2010). In addition, the shared meaning system that is the foundation of the symbolic boundaries and collective identity, provides a "tool kit" (Swidler, 1986) that members can use for the construction of organizational identities (Glynn, 2008).

Although the studies on the demarcation, formation, and maintenance of shared meaning systems and symbolic boundaries have provided invaluable insights, they conceive organizational fields as independent and autonomous spaces (see Fligstein & McAdam, 2012). These studies largely agree that organizational fields constitute 'a community of organizations that partakes of a common meaning system and whose participants interact more frequently and fatefully with one another than with actors outside the field' (Scott, 1995a, pp. 207-208) in a 'recognized area of institutional life' (DiMaggio & Powell, 1983, p. 148), but overlook that fields are also characterized by increasing interdependence. Hence, recent studies put forward that fields are better conceived as linked arenas (Furnari, 2016) or ecologies (Abbott, 2005), rather than disconnected, self-contained, and autonomous domains (Fligstein & McAdam, 2012). The latter studies have moved towards understanding fields as interconnected spaces, where boundaries are crossed (e.g., Boxenbaum & Battilana, 2005; Djelic & Ainamo, 2005; Eisenman & Simons, 2020), resources are exchanged (Furnari, 2016), and fields overlap (Evans & Kay, 2008). Focusing on the interactions between members of organizational fields raises the question how different meaning systems overlap and differ. Although each field is characterized by a distinctive meaning system (e.g., Scott, 1995a), considering that fields interact suggests that they share some meaning systems to

facilitate this interaction (Zietsma et al., 2017). Indeed, overlap in parts of the meaning systems have been found across institutional domains and organizational fields. For instance, the diffusion of managerial concepts (Meyer & Höllerer, 2010) and issues (Evans & Kay, 2008) beyond field boundaries and overlaps between fields in their visual registries, i.e. the visualization of institutions (Jancsary, Meyer, Höllerer, & Boxenbaum, 2017). Although fields' meaning systems, the collectively agreed upon meaning of a field (e.g., Glynn & Abzug, 2002; Lamont & Molnár, 2002; Suddaby et al., 2007; Weber et al., 2008) are much broader than its specific visual registries, managerial concepts, and issues, these studies show that meaning systems are, at least partly, shared by different and varying fields. However, which aspects of managerial concepts, issues, and visual registries are more likely to be shared, or which institutional domains are likely to share these is yet unexplored. Consequently, we focus on a particular part of the meaning system, namely its visualization, and the symbols or elements that create this visualization, in order to understand which symbols are more likely to be shared and by whom. Hence, the research question of this paper: *How can symbols connect and travel across fields?*

In a conceptual paper, Furnari (2016), highlighted how inter-field resource dependencies can constrain or enable institutional change. He highlighted how fields are interconnected through resources, even if the fields are 'institutionally dis-connected', that is each is characterized by its own 'distinctive shared meanings and institutions' (p. 556-557). Consequently, depending on resource dependencies and power imbalance, organizations belonging to the different fields will be more (or less) inclined to engage in institutional work to change current institutions and facilitate resource dependent relations.

Evans and Kay (2008) showed how environmentalists gained recognition for the legitimacy of their claims, how they made these claims a highly visible popular issue, and by that managed to obtain favorable side agreements (enforcement mechanisms and international standards) during the NAFTA negotiations. Environmentalists succeeded by exploiting field overlaps and interactions – rule linkages, network intersections, resource interdependence, and frame concordance – to their benefit. They used resources in one field as leverage in another field, and expropriated legitimating discourse from one field to attain goals in another field. For instance, environmentalists intertwined environmental and labor concerns, the latter being highly institutionalized and legitimate. In doing so, they expanded traditional fair-trade arguments concerning labor and provided legitimacy for the environmental impact of trade.

Djelic and Ainamo (2005), showed how the logic of fashion, originally associated with women's fashion was transposed, the process through which certain activities, (symbolic) processes, and practices are transported across institutional fields and geographic boundaries (Schneiberg, 2002; Sewell, 1992), to the field of telecom. They describe how fashion was a means for individuals to differentiate oneself from others. In that sense, clothes were not merely functional but became symbolic artifacts signaling status and identity. Nokia was one of the first mobile phone producers that recognized the value of fashion for telecom and made design one of its key characteristics during the early days of the telecom industry. Nowadays, it is hard to imagine the field of telecom without 'symbolic production, mass customization, and short commercial cycles' (Djelic & Ainamo, 2005, p. 46). Hence, their study shows how fields can come to share similar meaning frameworks and adopt similar practices.

These studies are very informative with respect to establishing how fields overlap and interact on particular issues and given particular circumstances. Evans and Kay (2008) and Djelic and Ainamo (2005) mainly relied on single case studies to create an in-depth understanding of how resources or practices from one organizational field are used in another field. Furnari (2016) made his argument by relying on multiple illustrative cases from past research to show how resource dependencies constrain or facilitate change. To contribute to this literature, we explore how symbolic elements of a field's meaning system are shared by other fields or embedded in the wider institutional context. We build on the premise that inter-field utilization of resources, transposition of practices, and institutional change are facilitated by an overlap in meaning systems. Similar to individuals, organizations are embedded in multiple, different collectives (Berger & Luckmann, 1966; Sewell, 1992). Organizations belong to an industry that is embedded in an organizational field, which in turn is (partly) embedded in national and cultural institutions, and international communities, resulting in multiple meaning systems (or a shared "tool kit") (Matthiessen, 2015) each at the respective level (industry, organizational field, inter-field, national, international). In addition, an organization can be a member in two different fields, for instance an organization that creates software or hardware for medical devices has membership in both the software and health care field. Consequently, an organization can be vertically embedded and have horizontally multiple memberships in different collectives, which entails that the organization needs a basic understanding of the meaning systems of the different fields and groups it belongs to, and the prospect that it could transpose practices from one field to another field.

Furthermore, some overlap in meaning systems across fields can be expected because of the advantages, often times resources, that come with certain practices embedded in a field. Consequently, these advantages provide an incentive to adopt the practices. That is, members of one field might appropriate elements to signal the practice of another field to access its resources, for instance when they share a common audience. Studies have shown that organizations claim membership in fields for these reasons, e.g., to access resources or gain legitimacy (e.g., Glynn & Abzug, 2002; Lee, 2001; Zhao, Ishihara, & Lounsbury, 2013). In addition, certain field-specific elements, get traction with more general audiences besides the field-specific audience. For instance, professional vocabularies are borrowed by non-professionals as these vocabularies foster organizing (Loewenstein, 2014). Yet, certain elements (e.g., highly specialized vocabulary) will remain field specific, emphasizing the distinctiveness of the field vis-à-vis other fields. For instance, when the field-specific element is protected by law (e.g., in the case of licensed professions). Similar to organizational identities (e.g., Brewer, 1993; Brewer, 2003; Zuckerman, 2016), field identities foster symbolic links with other fields on the one hand, and highlight a field's uniqueness and distinctiveness on the other hand. Consequently, fields are not only distinct from one another, but they will also exhibit some commonalities.

One of the ways to observe a field's meaning system is the study of vocabularies (Loewenstein, Ocasio, & Jones, 2012) which can be defined as the system of words and their meanings commonly used and central to social collectives (Loewenstein et al., 2012; Loewenstein & Ocasio, 2005). The use of distinct vocabularies by social collectives creates symbolic boundaries (Clark, 1998; Fine, 1995) and a collective's jurisdiction over domains of knowledge and activity (Abbott, 1988, 2005). The organizational field becomes visible through the shared vocabulary (Loewenstein et al., 2012) of the organizations that interact more with each other than with other organizations (Scott, 1995a). In other words, the patterns in the use of a vocabulary by individual organizations allow to observe the symbolic boundaries of a field. However, scholars of vocabularies have recognized the transposability of vocabularies, the diffusion of vocabularies beyond the boundaries of the focal collective to others, such as in the case of organizational fields (e.g., Loewenstein, 2014; Loewenstein et al., 2012). The diffusion of vocabularies specifically and organizing principles more generally (e.g., Ansari, Fiss, & Zajac, 2010; Strang & Soule, 1998) are guided by the creation of shared meaning systems and cultural categories (Loewenstein et al., 2012).

In this paper we specifically focus on the diffusion of elements of visual vocabulary, namely, the denotative and connotative meaning of the elements depicted in images (Meyer,

Höllerer, Jancsary, & Van Leeuwen, 2013). Similar to linguistic vocabulary, visual elements capture the underlying meaning systems shared by a social collective (Höllerer, Jancsary, Meyer, & Vettori, 2013; Jancsary et al., 2017). The underlying assumption is that the meanings of vocabulary, linguistic or visual, belong to the collective and its culture, rather than to a specific semiotic mode (Latour, 2012; Meyer et al., 2013). Building on the work of Dagognet, Latour (2012) for instance, described how some scientific disciplines invented their own written and visual language to create symbolic boundaries and a collective identity. Specifically, he described how chemistry as a discipline and field became powerful when a visual vocabulary was invented, the periodic table and the drawing of substances, that replaced the written language used to denote substances.

Acknowledging the distinct meaning systems of an organizational field and its symbolic boundaries matters (Dutton, Dukerich, & Harquail, 1994; Glynn, 2008; White, 1992; Wooten & Hoffman, 2008; Wry et al., 2011), as does explaining homogeneity, variation, contestation, and change within a field (Clemens & Cook, 1999; DiMaggio & Powell, 1983; Grodal, 2018; Powell, 1991). However, the existing organizational field literature has been concerned primarily with field members shaping their field's symbolic boundaries and by that creating a vision of fields as independent, autonomous, and disconnected islands (Fligstein & McAdam, 2012). This view has led to an understanding of the internal field processes that create, maintain, and change symbolic boundaries, but has left unexplored how these boundaries operate to separate or connect fields. To the extent that scholars have theorized how different fields interact and overlap, they have focused on the appropriation and leverage of resources and practices from one field into another field (Djelic & Ainamo, 2005; Evans & Kay, 2008; Furnari, 2016). In this paper, we contribute to the understanding of organizational fields, by investigating how the underlying meaning systems of organizational fields overlap and differ. We argue that these overlaps and differences facilitate inter-field connections, such as the transposition of practices, beliefs, and resources (Boxenbaum & Battilana, 2005; Eisenman & Simons, 2020; Evans & Kay, 2008; Furnari, 2016). We assume that organizational fields are embedded in social collectives bound by culture, nationality, and society, which allows for the overlaps in meaning systems to be formed around shared domains (Matthiessen, 2015). To explore how organizational fields' meaning systems overlap and differ we used a web crawler to reconstruct three different fields – health care, software, and organic food – in Germany. We collected visuals of these organizations from their websites, and then coded them along multiple dimensions.

Analyzing these data allowed us to observe which elements of the meaning systems these fields share and which are distinct.

THEORY

Symbolic boundaries, field identity, and vocabulary

To understand the overlaps and differences between fields' meaning systems we study field symbolic boundaries and collective visual identity as expressed in the use of vocabulary, specifically the use of symbols. Collective identity are those field elements that are distinctive, central, and enduring (Albert & Whetten, 1985; Glynn, 2008; Glynn & Abzug, 2002; Patvardhan, Gioia, & Hamilton, 2015), formed through interactions and associations (Hatch & Schultz, 2002; Schultz, Maguire, Langley, & Tsoukas, 2012). Although a study of field members' use of symbols is unlikely to capture the full collective identity of a field, it captures the visual representation of that identity, or in other words, the field's visual identity (Baker & Balmer, 1997; Melewar & Saunders, 1998; Oberg, Drori, et al., 2017; Van den Bosch, De Jong, & Elving, 2006). Vocabularies are instrumental in the social construction of meaning, and consequently central to organizational fields (Loewenstein et al., 2012). Furthermore, different social collectives use distinctive systems of words and meanings, that is, different vocabularies (Loewenstein, 2014; Loewenstein et al., 2012; Loewenstein & Ocasio, 2005). Hence, we study the visual vocabulary of the members of three fields to infer the symbolic boundaries of the field and explore where these boundaries are crossed.

The symbolic boundaries of organizational fields are created by members reaching consensus concerning definitions of the field's meaning and how the field is understood (Lamont & Molnár, 2002). When the members agree on the field's collective identity, on what it is but also what it is not (Glynn, 2008; Navis & Glynn, 2010; White, 1992; Wry et al., 2011), the symbolic boundary forms. Because of isomorphic pressures (DiMaggio & Powell, 1983), the members will tend to resemble one another, as being recognized as a member of the field bestows the organization with advantages, such as legitimacy and resources (e.g., Glynn & Abzug, 2002; Lamont, 2012; Zietsma et al., 2017; Zott & Huy, 2007). Besides resembling recognized and legitimate members of a field, another way in which organizations become to be viewed as members of a particular field, is by self-claiming membership (Grodal, 2018; Zbaracki, 1998). An example of self-proclaimed membership can be found in the study by Grodal (2018), she found that many firms, not necessarily primarily identifying with the field of nanotechnology, were using 'nano' in their names, as it helped them getting

access to funding. In her study, organizations self-proclaimed membership by appropriating the field's recognized vocabulary.

However, appropriating the vocabulary of another field might be limited if first, the use of the vocabulary is controlled by law and regulations, creating barriers to appropriation. For example, although there is some leeway in claiming to be a 'nano' organization, organizations cannot claim to provide medical care without the approval of regulative bodies that oversee the jurisdiction (Abbott, 1988, 2005). Hence, claims related to the medical profession are highly regulated, and unlikely to be appropriated by members of other organizational fields. In that sense, the vocabulary protected by law constitutes a distinctive and central element of the health care field. Second, the appropriation of vocabulary might be limited if the expected benefits of using the vocabulary are minimal or might even harm the collective identity of the field. Specifically, the expected benefits of using a claim of another field might not transpose any benefits, or even harm the focal organizational field – if it would contradict or undermine the collective identity and symbolic boundaries of the focal field. If a field targets an audience of professionals and strives to be identified as serious, specialized, and successful, e.g. the software field, it would be a poor choice to appropriate the vocabulary of nurseries and kindergartens, which often strive to be perceived more as friendly, playful, and nurturing. Or, where it paid for members of the telecom field to appropriate the fashion logic (Djelic & Ainamo, 2005), for many members of the field of health care using a fashion logic would most likely be detrimental. Yet, all fields mentioned – nanotechnology, health care, software, care for children, and telecom – share elements in common as well. For instance, organizations within these fields are likely to have a logo, might identify with a geographic location (e.g., 'established in Berlin' or 'made in Germany'), or refer to time with for instance a temporal anchoring device, a short reference to time often accompanied by a descriptor (e.g., 'since 1884' or 'founded in 2015'). Furthermore, although organizations in the software field are unlikely to use (certain) claims used in daycares, they might use a similar style (modern or minimalistic for instance) as health care organizations and telecom providers.

Available literature has focused on those elements commonly shared by members of a particular field that create a symbolic boundary (e.g., Dutton et al., 1994; Glynn, 2008; Lamont, 1992; Lawrence & Suddaby, 2006; Wry et al., 2011), but has not studied how certain elements overlap between members of different fields. Our contribution to these studies is by examining how the boundaries of different fields are crossed by certain elements, specifically visual elements. This is important, because the appropriation and use of

a field's vocabulary can confer significant advantages (Grodal, 2018; Lamont & Molnár, 2002) and inform about the multiple embeddedness of organizations in industries, fields, cultures, and societies.

Inter-field connections and multiple embeddedness

Multiple embeddedness refers to an entity's or individual's membership in multiple social collectivities (Berger & Luckmann, 1966; Sewell, 1992). Multiple embeddedness allows for resources and practices to be transposed between fields (Boxenbaum & Battilana, 2005; Sewell, 1992). For instance, Boxenbaum and Battilana (2005) showed how individuals with professional experience in the US were able to transpose the observed management practice, specifically diversity management, to Denmark. Meyer, Mudambi, and Narula (2011) show how multiple embeddedness of multinational organizations in different local contexts allows knowledge and resources to flow from one local field to a field in a different geographic location. In addition, Munjal and Pereira (2015) found that a flow of resources is facilitated by the experience of organizations in similar contexts. They found that multinationals with more experience in similar host countries faced fewer challenges in the M&A process. Most likely, with experience, comes an understanding of the meaning systems in these local contexts, facilitating the exchange of resources and practices and overcoming challenges. The aforementioned studies focus on 'horizontal' multiple embeddedness, that is membership in different social collectives at the same level of analysis. However, multiple embeddedness may also take a vertical form namely, at different levels of analysis. For instance, an individual can be a member of an organization, an industry, an organizational field, society, nation state, and culture, etc. 'Culture', in this example, might provide the overarching 'tool kit' (Swidler, 1986), in which the lower level 'tool kits', e.g., those of the organizational field or the organization, etc., fit and partially overlap, or constitute a subdomain (Matthiessen, 2015).

The embeddedness of organizational fields in higher-level social collectives implies that we should be able to observe common elements across organizational fields, elements that they extract from their shared embeddedness in these higher-level social collectives. Furthermore, we should see an overlap in vocabulary as one field uses the vocabulary of another field to its advantage. Differences between fields are expected as well, as these highlight the distinct collective identities unique to and at the core of a field. Taken together, the question arises where and when the symbolic boundaries are fluid and where they are

more rigid and how elements of visual vocabulary are transposed to other organizational fields or derived from the wider institutional context.

METHODS

We used a mixed-method approach to explore the differences and overlaps in the meaning systems of three organizational fields in Germany. First, using a webcrawler we reconstructed three organizational fields, health care, organic food, and software. Second, the logos of a sample of organizations belonging these fields were collected. We focused on those organizations that had at least four inbound links from other organizations. That means that at least four other field members had a hyperlink to the focal organization on their website. We chose four links, to ensure that organizations were recognized members of the field and to capture both the peripheries and centers of the field. Third, we constructed a survey to code the logos, an expanded version of the survey which was used by Delmestri, Oberg, and Drori (2015) in their study of university logos.

The three organizational fields were selected as we did not expect that the organizational fields would broadly share a common meaning system or that they are highly dependent on one another for resources. These considerations were important, because we wanted to exclude overlaps in the use of elements that emerged from interdependence or shared values and beliefs. In case of high interdependence or overlap in values and beliefs, we would expect to observe many commonalities in the use of visual elements and only little differences. Or we would expect the appropriation of visual vocabulary to gain access to a field's resources – which not only blurs the symbolic boundary but also the social boundary (Grodal, 2018).

The fields vary on several dimensions. First, the organizational fields differ in terms of their age, which can lead to differences in their vocabularies, as the conditions of founding can have a lasting effect on fields (Meyer & Rowan, 1977; Stinchcombe, 1965). That is, depending on the founding context a certain vocabulary emanating from that period may be used. In addition, older fields are expected to be more homogeneous as communicative practices have been established and institutionalized over time. Within younger fields, the communicative practices might still be emerging, evolving, and contested. The field of health care is the oldest field of the three. Although modern medicine developed after the industrial revolution (MNT Editorial Team, 2018), health care was practiced long before (Spikins, Needham, Tilley, & Hitchens, 2018). The field of organic food has its roots in the beginning

of the 20th century (Gerber & Hoffmann, 2000) and the relatively young field of software emerged in the 1950s (Mahoney, 1990).

Second, the fields differ with respect to the degree of professionalization, affecting the entry barriers for potential newcomers and the need to conform to regulatory requirements. Health care is highly professionalized, with the requirement of lengthy formal education, with many professional networks, and control agencies. Nurses, doctors, and therapists are licensed professionals, meaning that they must comply with licensure requirements before they can practice their occupation. The field of software is less professionalized. Formal education is not required, but available and often preferred. The field of software has professional networks and regulatory agencies start to emerge (e.g., certifications for safe online shopping), but a license is not needed to call oneself a software engineer. The field of organic food is the least professionalized, with formal education not required and fewer professional networks. However, organizations have emerged that are monitoring and certifying organic food production, such as 'Demeter'. Although it is not required to apply for a 'Demeter' approval, it might help the organization to thrive and survive.

Third, these fields are expected to rely on different narratives, because of their different activities, practices, and logics (Loewenstein et al., 2012). Hence, we believe that we can observe different communicative practices between the three fields. Fourth, we expect these fields to target different audiences, which might also affect their (visual) vocabularies and communicative practices. The field of health care is expected to target both consumers, e.g., patients, and professionals, such as nurses and doctors. The field of software is expected to mainly target professionals and organizations, in other words the field of software is expected to address a professional audience. Members of the field of organic food are expected to mainly target consumers. We assume that a different audience would require a different vocabulary. For instance, when targeting an audience of professionals that is familiar with the field's vocabulary a couple of simple and ambiguous cues might suffice. However, more uninformed audiences, e.g., consumers, may require clear and multiple cues in order to classify organizations as members of a field and to understand its collective identity (e.g., Glynn & Abzug, 2002). Below we give a brief description of the three organizational fields, to illumine the context and highlight the differences between the fields.

Health Care

The field of health care includes all actors concerned with health maintenance, and improvement, or the prevention of (further) health deterioration. Health care professionals, such as physicians, nurses, technicians, researchers, etc., do so via prevention, diagnosis, treatment of diseases, injuries, and attending to other physical and mental impairments. The exact origins of the field are difficult to trace, as some claim that health care is as old as humanity (Spikins et al., 2018). The recognition of Hippocrates as the father of modern medicine attests to its ancient roots. However, health care as we currently know it emerged after the industrial revolution, in the second half of the 19th century (MNT Editorial Team, 2018) to address the risk of infectious diseases which increased considerably due to the rapid economic changes and way of living (e.g., urbanization). Simultaneously, scientific advances made new treatments and preventative actions possible, for instance gaining knowledge about how increased hygiene could prevent the spread of diseases.

The German health care system is a multi-payer system, which includes basic statutory health insurance and private health insurance (Bärnighausen & Sauerborn, 2002). Health care is the largest economic sector in Germany overall, and the significance of private hospital operators has been increasing in recent years (Statista, 2019a). In 2017, Germany had 47,303 health care organizations, employing over 2,5 million people. The field is also highly regulated and extensive training and various licenses are necessary to become a doctor, nurse, or therapist.

Organic Food

The first ideas for the revival of organic food production in Germany can be traced back to the beginning of the 20th century, when organic farming formed a counter movement to the problematic side effects of industrialized agriculture and the negative effects of nitrogen usage on soil and product quality (Vogt, 2007; Willer & Schmid, 2016). Organic farming was infused with ideology (Barton, 2018) with its origins in Rudolf Steiner's anthroposophical movement (Vogt, 2007). Consequently, it remained relatively unpopular with the masses and was practiced on a small scale only.

In the 1970s, organic food production gained popularity and an increasing number of farmers converted their business to organic farming (Gerber & Hoffmann, 2000). This increase in popularity was supported by the creation of certification ensuring production standards ("Bioland") in 1971. It was also during this decade that the first educational programs were established focusing on organic food production and the International Organic

Farming Association (IFOAM) was established. The rise of German organic farming continued and since the 1990s, organic food production has a considerable market share. In the last decade, Germany saw an exceptional increase in the revenues of organic food, from 8,5 billion euros in 2008 to 11,97 billion euros in 2019 (Statista, 2020). More than 77,800 organizations with organic certification operated in 2018 (Statista, 2020).

Software

The software field has its roots in the 1950s and 1960s, in the developing computer industry (Mahoney, 1990). One of the first famous software applications was written by a team of software engineers at NASA, for the Apollo mission in 1961. The term "software engineering" was allegedly first introduced in 1965 (Randell, 1979; Ross, 1985). However, the term became commonly used after 1968, the year that the first international conference on software engineering took place, organized by the NATO Science Committee in Garmisch, Germany (Randell, 1979). In the late 1960s the production of packaged software, i.e. bundles of software sold together (e.g., Microsoft Office), took off (Ensmenger, Aspray, & Misa, 2010). It was also during the 1960s that the first operating systems were created at IBM (Ensmenger et al., 2010). During the 1970s, with the introduction of the microcomputer, the popularity of software increased. Software became even more of a necessity with the introduction of IBM's personal computer in the 1980s. Nowadays, with the widespread use of Internet and the World Wide Web, software applications are numerous and it became difficult to imagine a world without software.

Germany is Europe's single largest software market, accounting for approximately a quarter of the entire European market in terms of revenues with near 26 billion euros in revenues in 2019 (Statista, 2019b). Well known German software companies are SAP, a developer of enterprise software to manage business operations and customer relations, established in 1972; Lufthansa Systems, one of the world's leading IT providers in the airline industry founded in 1995; Instinctools, offering solutions in web development, mobile development, and analytics founded in 2000; and SoftServe, specialized in cybersecurity and web development, established in 1993, among many others (see McClements, 2019). However, the majority of the software organizations are small and medium sized enterprises (GTAI, 2019). In 2017, there were roughly 90,300 software organizations in Germany (Koptyug, 2020).

Reconstruction of Organizational Fields

Using a webcrawler the three organizational fields were re-constructed. The webcrawler is written in such a way that it collects all hyperlinks to other organizations referenced by a focal organization, next it collects all hyperlinks referenced by those organizations, etc. Hence, it uses a snowballing technique to reconstruct the organizational fields. The initial list of organizations was created in three steps. First, a list of city names was extracted from a list of German counties. For each of these cities, the city website was scraped to identify outgoing references. Second, in the list of outgoing references sport clubs were identified based on common abbreviations (e.g., "TSV" which stands for "Turn und Sportverein" (gymnastic and sports club), "FC" standing for Fuβball Club or "FV" Fuβball verein (soccer club)). The websites of the sport clubs were also scraped. Third, outgoing references of the city websites and of the sport clubs were filtered on core elements of the three fields of interest. For instance, "bio" for organic food, "soft" for software, and "med" for health care. The third step led to a list of potential field members and served as the initial list for the webcrawler. The logic behind the three steps is that medical services are often referenced by cities and villages because they provide essential services. Furthermore, sport clubs are often depending on local sponsors for their funds, these sponsors are often small and medium sized enterprises in varying fields, including organic food, software, and health care.

After the webcrawler collected the websites that the initial focal organizations referred to, research assistants verified whether these organizations actually belonged to the field or not, based on several criteria. First, the research assistants were trained to recognize whether the referenced organization was an organization related to health care, organic food, or software. In order to categorize the organizations, they would inspect the website to assess the main activity of these organizations. This step was necessary as organizations sometimes refer to other organizations that do not belong to the field (e.g., organizations in the same town, magazines, etc). Second, research assistants assessed whether the organizations identified by the webcrawler are organizations that belong to the production chain of the organizational field. In this step, regulatory (e.g., ministries) or general media organizations were excluded from the network. These organizations were excluded, as they referenced many more organizations than those belonging to the three specified fields. Furthermore, these regulatory and general media organizations do not belong to the organizational field as they do not 'interact more frequently and fatefully with one another than with actors outside the field' (Scott, 1995a, p. 208). Media and regulatory organizations that specifically focus on

one of these three fields were maintained. Next, the webcrawler would run again, to collect more referenced organizations. Again, research assistants verified these organizations. This procedure continued for a number of iterations, until the webcrawler identified stable organizational fields, see figure 1 for the network. The fields were determined to be stable when running the webcrawler did not return anymore new actors or a different configuration of the fields.

The method identified potential participants based on web connectivity, rather than ontological properties (Powell, Oberg, Korff, Oelberger, & Kloos, 2017). Hence, membership is defined by relationships to other members in the field and not a priori by the core activities of the organizations. This method of reconstructing organizational fields works best in fields with high levels of mutualism. Even if organizations do not reference their direct competitors, in fields with high levels of mutualism there is a higher likelihood that competitors are referenced by the same third organization, often these are regulative bodies or media organizations. In all three fields we expected mutualism. In health care, many regulative bodies and associations exist that are likely to be linked to many members of the field. In organic food, certification organizations and specific media outlets strive to make the field and its members visible and recognizable. In software, associations are likely to increase the visibility of the members of the field.

Another advantage of the method is that it reveals "mutual recognition, a common awareness and willingness to share traffic and thus a critical resource: attention" (Powell et al., 2017, p. 315), indicating that the members recognize other field members. Furthermore, a basic requirement of the method is that organizations have websites. Although that is not the case for *all* organizations, we do not see a priori reasons for the organizations in these fields to be specifically underrepresented on the World Wide Web. On the contrary, these organizations are likely to benefit from an online presence as this will make them more accessible and visible for potential customers and patients. They are not operating in the illegal or illegitimate spheres, nor do they benefit from secrecy. Health care organizations need to be visible and accessible to attend to patients. Organic food organizations benefit from an online presence to reach their main audience: consumers. A software organization without a website either delivers a very specific product to a select group of buyers (e.g., for the military), or would not be taken seriously by other actors in the field and potential customers. In total, more than 93,000 members were identified for all three fields using the webcrawler.

A second independent qualitative assessment was done to check each entity (1) again for its membership in the relevant field, (2) for the audience the organization addresses (e.g., professionals, business, consumers, or combinations) by inspecting the websites, and (3) for existing duplicates. In the step following the second assessment of field members, two research assistants collected snapshots of the homepage of a sample of organizations that were identified as belonging to the organizational fields. Organizations for which we collected the screenshots were chosen based on the number of times they were referred to by peers, namely four. That is, an organization had to be referenced by at least four other organizations in its field to be recognized as a member. This threshold allowed us to identify both members in the center and periphery of the fields, but also kept data collection manageable. In addition, the research assistants created cut outs of the organization's logo from its homepage.

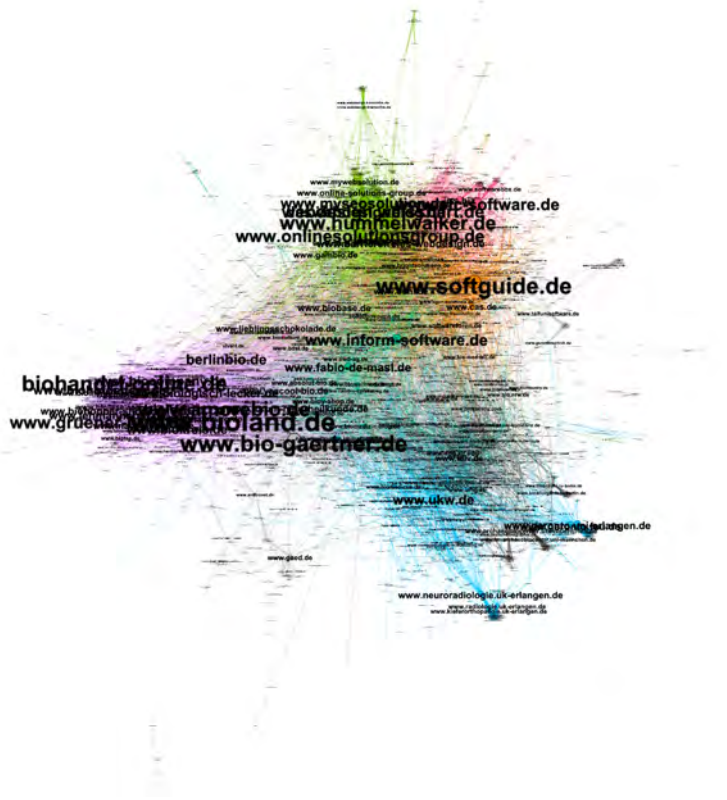


Figure 1. Organizational fields. *Purple nodes = organic foods, blue and black nodes = health care, green, orange, and pink nodes = software.*

Logos are part of the visual vocabulary, hence visual identity, of organizations, the visual identity includes all visual aspects of an organization, such as buildings, products and product packaging, uniforms, vehicles, stationary, etc. (Hynes, 2009; Van den Bosch et al., 2006; Van den Bosch, de Jong, & Elving, 2005). Large organizations invest heavily in their logo design, as the logo represents the organization and the organization's values (Melewar,

Saunders, & Balmer, 2001; Melewar, Bassett, & Simões, 2006). Although organizations use logos to present their visual identity, that is unique and distinctive to the firm, similarities in logos that belong to the same sector have been found in prior studies (e.g., Delmestri et al., 2015; Drori et al., 2016). Similarly, prior research has shown that organizational names become more similar due to isomorphic pressures (e.g., Glynn, 2008; Glynn & Abzug, 2002; Glynn & Marquis, 2006). Hence, by analyzing the logos of individual organizations, we are able to observe the institutionalized norms of what is (not) an appropriate visual identity in the field and construct the visual register of a field (Höllerer et al., 2013; Jancsary et al., 2017). In total we collected and analyzed 504 logos. Table 1 provides an overview per field of the number of logos, and distinguishes between logos that belong to organizations in the core of the field or to organizations in the interstitial space between the fields. As visible in figure 1, the three organizational fields are linked. The actors bridging these fields, but not specifically belonging to one of the fields operate in the interstitial space (Oberg, Korff Valeska, & Powell Walter, 2017). The organizations in our sample belonging to the interstitial space received at least four references from other organizations in the entire network (all three fields).

Organizational field	**Logos**
Health care	96
Organic food	189
Software	144
Interstitial space	75
Total	**504**

Table 1. Number of logos analyzed.

Semantic Analysis of Logos

After the fields were reconstructed, research assistants at the University of Mannheim collected visuals of the websites of the organizations belonging to the three fields. They took a screenshot of the home page of the organization, and later they created a cut out, in Word, of the organization's logo as appearing on the homepage. That cut out was used in our analysis.

Following the collection of the visuals, a content analysis was performed. The content analysis was performed to extract the different narratives and vocabularies used in the different fields as expressed in the visuals. We followed the approach by Delmestri et al. (2015), meaning that the content analysis involved coding separate elements of the visual.

We built on the survey of Delmestri et al. (2015) who focused on the analysis of university logos, that we extended with additional questions and answer options. In this project a more diverse set of organizations is considered, which also entails that the images contain a broader range of features, or in other words, draw from a broader visual register (Jancsary et al., 2017). For instance, where they did not code for explicit references to time, computer related features, and food, we decided to include these features in our survey. The questions coded for style elements, such as color, outer and inner form, and the combination of visual and text, content elements, for instance references to time, geography, and people, and Gestalt elements. Gestalt elements are overall impressions of the entire image (i.e. combination of both visual and text elements), for instance whether the image is traditional or modern. In total we coded the visuals on 39 dimensions. An advantage of the coding survey is that answer options include the explicit code for missing elements. In other words, we did not only code elements that did appear (e.g., farm animals) but also explicitly coded for unobserved elements (e.g., no animals). The entire list of questions and answer options, hence the full visual register for all three fields, or the entire visual corpus, can be found in Appendix A. The design of the survey was an iterative process, in which the research team brainstormed about important features, coded a subset of logos and adjust the survey when needed to code a full range of visual elements. The answers that were collected during this iterative process were deleted and by that excluded from our interpretation. When the research team agreed on a final survey, other coders were invited to aid in the coding of the visuals.

The coding was done by the principal investigator of this thesis, a PhD student from Tilburg University, research assistants and researchers at Mannheim University, and master students from the Vienna University of Economics and Business. In total, we had twelve active coders, with seven of them coding more than 3,000 question-image combinations each. All visuals were coded several times per element. In total we had 51,880 question-logo codes.

All coders have a good command of German. Furthermore, they have at least a Master's degree or are in the process of obtaining one. The coders received either a salary for coding (in the case of the research assistants) or voluntarily signed up to code. In this way, we ensured the coders were reliable and would code to the best of their abilities. The coders got detailed instructions, in the form of a PowerPoint presentation, explaining the questions and answer options. In this way, it was ensured that all coders interpreted questions and answers similarly. Furthermore, these slides were used as a reference guide during the coding. A particular question with answer options was shown 25 times, with 25 different

visuals, to coders. After 25 times, a different question was presented. This allowed them to answer questions quickly, without boring them with the same question too many times. In the case they made a mistake (e.g., accidentally choosing the wrong answer) they were able to delete their answer. If coders' answers on questions differed, the principal investigator and a master student from WU working on the project discussed until reaching agreement, what the answer should be.

RESULTS

The coding of the different visual elements of the collected logos, allowed for distributions to be created and patterns to emerge. We divided these observations in three categories: elements belonging to all fields, elements shared by two fields, and elements that are unique to a field. Hence, we have not exhausted the data and only focus on those question-code combinations that emerged as particularly interesting and more meaningful patterns. However, in Appendix B we include a table that shows an overview of all data. Before we go into the details of these three categories, we first elaborate on what we consider a test and proof of our method.

Proof of method

Scholars of institutional theory have argued and shown that organizations belonging to the same field are more homogeneous because of isomorphic pressures (DiMaggio & Powell, 1983). In addition, taking the definition of organizational fields as organizations that share a common meaning framework (Scott, 1995a), rather than focusing on structure or ontological properties (Powell et al., 2017), should allow us to observe elements that are shared by the members of a field. Indeed, prior research has shown for example, that over time organizations adopt similar naming practices (Glynn & Abzug, 2002), organizational forms (Frumkin & Galaskiewicz, 2004), and visual symbols (Clarke, 2011). Consequently, when reconstructing organizational fields using a web crawler, we should be able to identify common practices used by the organizations that are members of a particular organizational field and thus differentiate ingroup members from outgroup members.

To check whether our method of field reconstruction resulted in the identification of distinguishable organizational fields and a common set of codes within fields – representing the field members shared meaning systems, we looked at organizations' mentioning of main activities in the logo. The reference to the field's main activity – textually or visually – on top of the connection to other organizations is a clear sign of field membership. Specifically, it

would be very unlikely that an organization that is active in software would explicitly state a different main activity. Figure 2 shows the textual reference to a main activity. Grey nodes do not include a textual reference to a main activity, blue nodes indicate a reference to software or web design, green nodes indicate a reference to organic food, lime notes a reference to food production in general, red nodes indicate a reference to health care, yellow nodes correspond to references to bakeries, orange nodes refer to alternative medicine references, and sienna nodes refer to other field references. Table 2 shows the same overview in numbers.

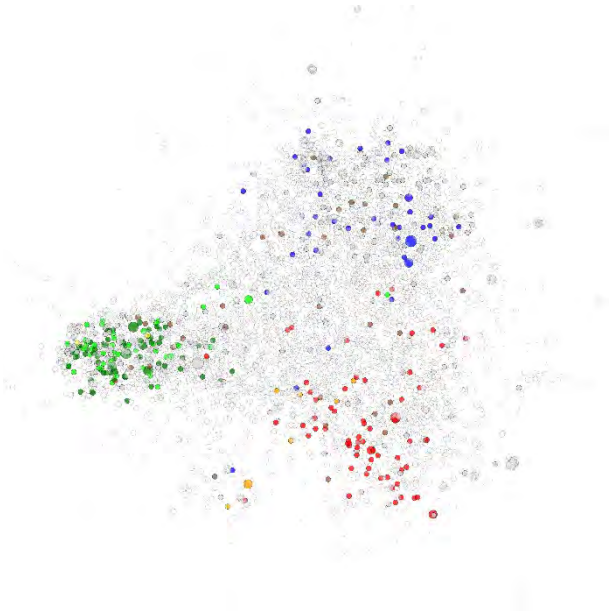


Figure 2. Textual references to main activity*. Blue = software, green = organic food, lime = food, red = health care, yellow = bakery, orange = alternative medicine, sienna = other.*

Field/Main activity	*Health care*	*Organic food*	*Software*	*Interstitial space*
Software	2.11%		23.24%	11.85%
Organic food	1.05%	32.26%	0.70%	3.70%
Food		23.66%	0.70%	6.67%
Health care	65.26%	0.54%	3.52%	12.22%
Bakery		1.08%		
Alternative medicine	4.21%			4.81%
Other	7.37%	4.30%	8.45%	12.96%
Non	20.00%	38.17%	63.38%	47.78%

Table 2. Textual reference to main activity. *The percentages are of the total visuals coded of a particular field.*

Figure 2 and table 2 show concentrations of textual references to main activities as we expected, showing a high density in references to (organic) food in the organic food network,

to health care in the network of medical organizations, and software in the network of software providers. This supports our assumption that a web crawler is able to reconstruct organization field networks, that share a common meaning system, based on web connectivity (Powell et al., 2017). Furthermore, the concentration of the textual references to a main activity shows the emerging boundaries between the fields, which are blurred by organizations in the interstitial domain.

In addition to a textual reference to a main activity, we coded for a visual reference to a main activity or field. For instance, the use of a visual representation of a carrot (representing food), computer monitor (representing software), or a caduceus (as a reference to health care). Although the density of visual references to main activities, signaling field membership, is lower than the use of textual references, we can see clear demarcations between the fields (see figure 3 and table 3). For instance, organizations in the field of software sometimes do use visual references to computers, but they mostly abstain from the use of visual references to organic foods or health care indicators. This observation is again supporting our assumption that the web crawler can re-construct organizational fields.

Organic food *Software* *Health care*

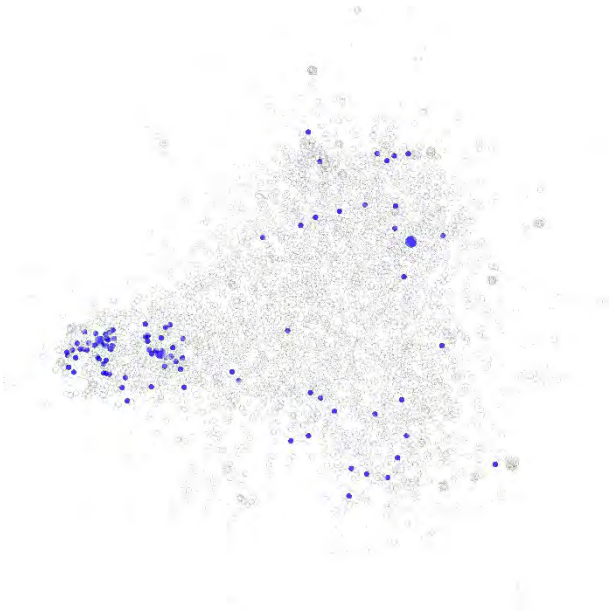
Figure 3. Visual reference to main activity.

Field/Main activity	*Health care*	*Organic food*	*Software*	*Interstitial space*
Food		13.40%	0.72%	1.86%
Software	2.15%	1.11%	14.39%	7.89%
Health care	30.61%	0.54%	2.80%	2.04%
Food none	100%	86.60%	99.28%	98.14%
Software none	97.85%	98.89%	85.61%	92.11%
Health care none	69.39%	99.46%	97.20%	97.96%

Table 3. Visual reference to main activity. *The percentages are of the total visuals coded of a particular field. Because the table combines several questions in the coding survey the total for each field adds up to 300%.*

Shared elements between all three fields

We observed several commonalities between all three fields. First, in all fields we observe that it is a common practice to use the organization's full name in the logo. This emphasizes the organizations' needs to be recognizable and identifiable. In the next section we will also describe that even though a substantial number of organizations in all fields use the full name, in addition we also observed naming practices that are field specific. Second, we observed that in all three fields, organizations make use of claims in German, see figure 4 and table 4. This may indicate that these organizations are addressing primarily German speaking audiences. Third, we observed that most organizations in the fields use images that were coded as being, overall, of a present style. We asked coders to assess what kind of image they observed (its Gestalt), with a distinction between traditional, old-fashioned, classic or elegant, later categorized as 'past style', futuristic (later labeled as 'future-style'), modern or minimal, present-day, grouped as 'present style', hipster, alternative, categorized as 'creative style', and neutral or mixed style. Hence, a 'present style' indicates to some extent that these organizations have up-to-date visual identities resonating with the coders' perception of contemporary images. See figure 5 and table 5 for the distribution, with the blue nodes indicating a 'present style' image.



Examples:

Software:

Health care:

Organic Food:

Figure 4. Claims in German.

Field/Language	*Health care*	*Organic food*	*Software*	*Interstitial space*
German	12.63%	29.61%	13.04%	11.67%
English	2.11%	1.68%	8.70%	6.81%
Other		0.56%		
Non	85.27%	68.16%	78.26%	81.52%

Table 4. Claim language. *The percentages are of the total visuals coded of a particular field.*

Figure 5. Overall style of the image (Gestalt). *Dark magenta = past, cyan = future, blue = present, lime = creative, red = mix.*

Field/Gestalt	*Health care*	*Organic food*	*Software*	*Interstitial space*
Past	23.44%	32.58%	8.89%	21.11%
Present	68.75%	25.76%	72.22%	64.19%
Future	3.13%		7.78%	1.11%
Creative	3.13%	35.61%	8.89%	8.31%
Mix	1.56%	6.06%	2.22%	5.28%

Table 5. Overall style of the image (Gestalt). *The percentages are of the total visuals coded of a particular field.*

Fourth, we observed that organizations in all three fields use visual elements that have varying styles, e.g., figurative, minimal, abstraction, photos, or mix of styles. That is, we observed all styles in all fields. Visual elements are those graphic depictions, excluding text, in images. To give an impression of the different styles, we selected three logos from our sample, one from each field, see figure 6.

Abstraction
Organic food

Figurative style
Software

Minimal style
Health care

Figure 6. Style of visual elements.

Fifth, in all fields we observed the use of temporal anchoring devices (TADs), short references to time often accompanied by a descriptor, see table 6. Interestingly, a little over 10% of the organizations' logos we coded included a TADs, scattered across all fields – but used slightly more in the field of organic food. By far, references to the past, followed by

references to age or anniversaries, are more popular than references to the present or future. Even the relatively young, innovative, and future oriented field of software uses references to the past. See figure 7 for an example of each field.

Field/TADs	*Health care*	*Organic food*	*Software*	*Interstitial space*
Past	2.15%	9.73%	5.04%	2.80%
Present				2.80%
Future		1.08%	2.16%	
Anniversary/age statement		1.08%	1.44%	8.45%
Other	1.08%	1.08%	0.72%	
Non	96.77%	87.03%	90.65%	85.92%

Table 6. TADs. *The percentages are of the total visuals coded of a particular field.*

Future (Zukunftsstiftung = Future foundation)
Organic food
Past
Software
Other
Health care

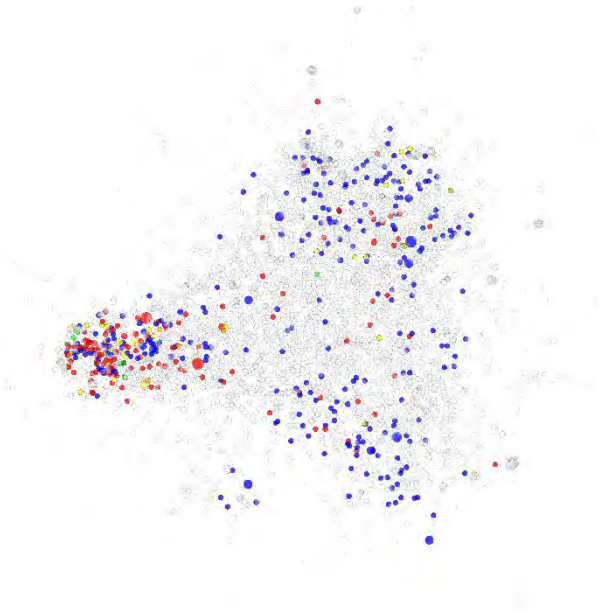
Figure 7. TADs.

The elements shared by organizations in all three fields – the use of the organization's full name, claims in German, a present overall style image, the use of varying visual styles, and the use of TADs – highlight what is shared by members belonging to the three fields, and hence is not field specific (Patvardhan et al., 2015; Zietsma et al., 2017). These are the elements that might be derived from what they share (Matthiessen, 2015) namely, the embeddedness of these organizations in Germany and the German culture. In addition, these elements may denote what is necessary for organizations to use in order to be recognized as an organization (and not another object or natural person) and categorized as such by their audiences. Furthermore, the elements shared by members of all fields are necessary to gain legitimacy and function effectively (Sagiv, Schwartz, & Arieli, 2011) in the national context. Our results also indicate that what is shared by all three fields is at a more abstract level, allowing for variation and interpretation by the individual organizations. For instance, we found that it is common for organizations in all fields to use a full name, rather than abbreviations, acronyms, etc. Yet, how the full name is constructed, for instance a family name, listing a main activity, or legal form, is indeterminate. Unlike Glynn and

colleagues we are not able to predict the *content* of the name (e.g., Fred's Pizza is more likely than Fred's Bank) (Glynn, 2008; Glynn & Abzug, 2002; Glynn & Marquis, 2006), but we observe a general practice in the *form* of the name (e.g., Fred's Organic Food, Fred's Software Company, and Fred's Hospital are more likely than FOF, FSC, and FH). Thus, the three fields share the practice of the organization's name *form* but diverge on the practice of organization's name *content*.

Shared elements between the health care and software fields

Beginning with the commonalities shared by the software and health care field, we observed two elements that are used in the images of both fields' organizations. First, both software and health care organizations mainly use sans serif fonts, clear and simple fonts without frills, such as 'Arial' or 'Calibri', as a typical text design in their logos, see figure 8, and table 7, for the distribution of fonts and examples. Organizational images may include various fonts: Blue nodes represent sans serif fonts, green and lime nodes indicate handwritten old and modern fonts respectively, red nodes stand for a combination of fonts, and yellow and orange indicate playful or anthroposophical fonts. As visible in figure 8 and table 7, the dominant font used in the software field and health care field is sans serif. In addition, only few organizations in both fields use a combination of fonts. If such combinations are used, they mostly occur in the software field, which is the only noticeable difference between the health care and software field regarding fonts. Hence, the variety of used fonts is comparably low in these two fields. Additionally, both fields abstain from the use of handwritten fonts, which underscores the overall observation that clear font styles are the preferred font designs amongst software and health care organizations.



Examples:

Software:

Microsoft

Health care:

DZNE
Deutsches Zentrum für
Neurodegenerative Erkrankungen
in der Helmholtz-Gemeinschaft

Figure 8. Font style. *Red = a) serif or b) serif and sans serif, blue = sans serif, green = handwritten old style, lime = handwritten modern style, orange = anthroposophical, yellow = playful, red = combination of fonts, light gray = no font.*

Field/Font	*Health care*	*Organic food*	*Software*	*Interstitial space*
Sans serif	83.70%	36.41%	74.47%	68.11%
Serif	6.52%	18.48%	6.38%	6.92%
Handwritten old		1.63%		
Handwritten modern		2.17%		1.85%
Anthroposophical		2.72%	0.71%	1.85%
Playful	1.09%	10.87%	7.09%	3.03%
Mix	6.52%	24.46%	7.09%	16.38%
Other	2.18%	3.26%	3.55%	1.85%
Non			0.71%	

Table 7. Font style. *The percentages are of the total visuals coded of a particular field.*

Second, members of the health care and software fields use visual references to geography, more specifically to globes and continents (see figure 9, blue nodes represent references to globes and continents, and table 8). In contrast, the organic food field organizations use a greater variety of different geographical elements, including landscapes (orange nodes), city and building contours (green nodes), in addition to globes and other elements.

Figure 9. Visual geographical reference*. Light gray = no geogr. reference, blue = globe and continent contour, orange = landscape or farmland, green = city contour and building, sienna = other geogr. reference.*

Field/Geographical reference	***Health care***	***Organic food***	***Software***	***Interstitial space***
Globe & continent contour	2.06%	1.14%	2.90%	1.85%
Landscape		8.00%		
City contour & building		1.71%		
Other	5.15%	1.71%	1.45%	
Non	92.78%	87.42%	95.65%	98.15%

Table 8. Visual geographical reference. *The percentages are of the total visuals coded of a particular field.*

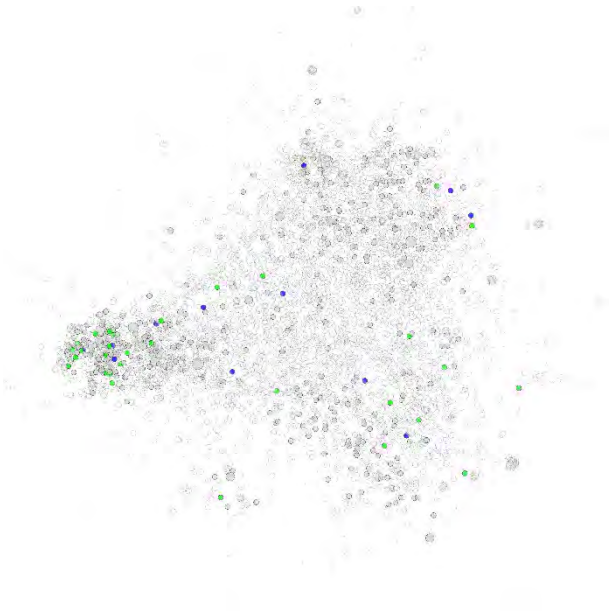
Overall, the elements described above, the similarity in fonts used and references to globes and continents, can be regarded as specific, meaning constructing vocabularies (Meyer et al., 2013) or visual registers (Jancsary et al., 2017), that are shared by members of the health care field and software field. First, fonts convey meaning beyond the written word: "the visual characteristics of verbal material possess semantic characteristics" (Childers & Jass, 2002, p. 95). Similarly, Van Leeuwen (2011) stresses that words do not only have a linguistic but also typographic meaning. Sans serif fonts do not have connections in between letters – in contrast to handwriting, have clear lines, and exhibit regularity. Therefore, these types of fonts can be associated with clarity, discipline, efficiency and – if bolded – importance (Van Leeuwen, 2011). While the interpretation of typographies may be part of a society's cultural 'tool kit' (Swidler, 1986), the specific sans serif font signals professionalism. Consequently, the overwhelming use of sans serif fonts in health care and

software field establishes a distinct symbolic boundary (Glynn, 2008; Lawrence & Suddaby, 2006), between software and health care on one hand and organic food on the other hand.

Second, both software and health care organizations use visual depictions of globes and continents. Although globes and continents are also used by some members of the organic food field, it is noteworthy that it is the only commonly used visual geographical reference in both software and health care. A globe can represent a geographic area, in which the organization is at the center and the world is its playground (Ingold, 1993; McHaffie, 1997). When globes represent a geographic area, an organization often visualizes itself within the image of the globe (Ingold, 1993). However, a globe can also represent an entity on its own, that is worth to be studied and understood (Ingold, 1993; McHaffie, 1997). In this case, the organization places itself (or its name, etc.) outside of the globe, like an astronaut looking down on earth (Ingold, 1993). It is likely that a visual reference to a globe has a different meaning in the two fields. Software organizations may use a globe to highlight their ability to operate globally and not be limited by a geographic location. Health care organization may make references to globes to emphasize their goal and need to eradicate global diseases and contribute to global well-being.

Shared elements between the health care and organic food fields

First, the proportion of organizations in health care and organic food that use a family name in their images exceeds the proportion of family name usage by software organizations. We asked the coders to differentiate between images in which the company's name is the name of the founding family or owner (lime, e.g., "Dell Inc."), also including those images in which a family name does appear but is only part of the company name (also lime nodes, e.g. "Biohof Achleitner") or images where the family name is not part of the organization's name but included in the motto or tagline of the visual (blue nodes, e.g., "Maxon – a Nemetschek company"). Figure 10 and table 9 show that if health care or organic food field members incorporate a family name in their logo, it mostly appears as (a part of the) company name. Interestingly, a relatively high percentage of organizations in the interstitial space also include a family name either in the organization's name or tagline.



Examples:

Health care:

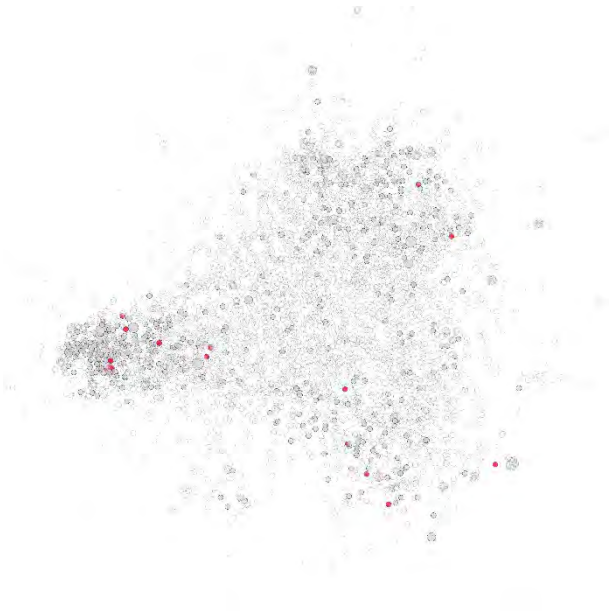
Organic food:

Figure 10. Family names*. Lime = family name is (included in) company name, blue = family name in tagline, light gray = no family name.*

Field/Family name	*Health care*	*Organic food*	*Software*	*Interstitial space*
(Included in) company name	6.25%	10.38%	0.70%	14.65%
Included in tagline	1.04%	2.73%	1.41%	9.28%
Non	92.71%	86.89%	97.88%	76.08%

Table 9. Family names. *The percentages are of the total visuals coded of a particular field.*

Second, organizations in both fields refer to awards, by including ribbons, crests, garlands, bows, or trophies in the logo. Although these visual references not necessarily imply that awards have been received, they are commonly used as a visual reference to awards, achievement, and recognition. Figure 11 (red nodes) and table 10 illustrate that – except for two software organizations – most of the award referencing organizations belong to the fields of health care and organic food.



Examples:

Health care:

Landesärztekammer Hessen
Körperschaft des öffentlichen Rechts

Organic food:

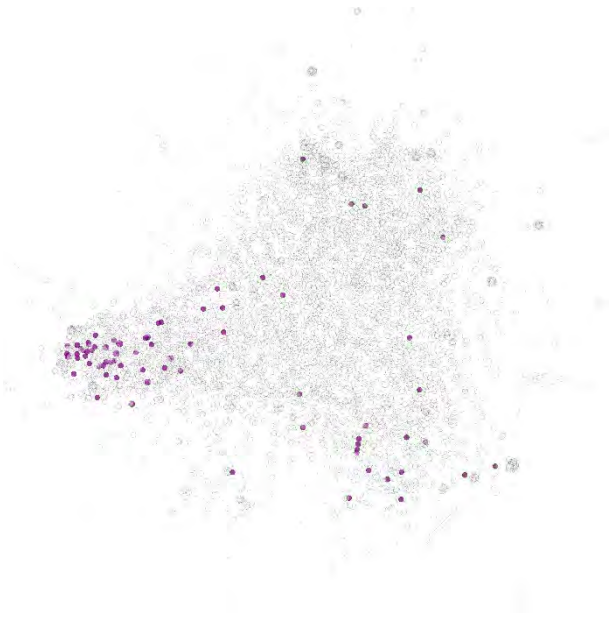
Figure 11. Award reference. *Light gray = No award reference, red = Ribbon.*

Field/Award	*Health care*	*Organic food*	*Software*	*Interstitial space*
Award	5.21%	3.33%	0.70%	0.68%
Non	94.79%	96.67%	97.90%	99.32%

Table 10. Award reference. *The percentages are of the total visuals coded of a particular field.*

Third, images of organizations in both fields are created in traditional or classic, or past, style (see figure 12, dark magenta nodes, and table 3 above). We observed earlier that many organizations use "present style" images in all three fields, yet it is distinct about the organizations in the organic food field and health care field that many organizations use "past style" images. The use of more traditional and old-fashioned images may be caused by the age of these fields, whereas software is a relatively young and modern field, organic food and health care have a much longer history that could have left its trace in the current images and styles of these organizations (e.g., Stinchcombe, 1965). Another interesting aspect of the images' traditional appearance within these fields is that the proportion of this style is higher in organic food than in health care. These organizations might use traditional and old-fashioned styles to show their long histories and grounding in the past, to gain legitimacy and credibility (Foster et al., 2017; Suddaby et al., 2010). Organizations in health care, on the contrary, can gain legitimacy and credibility as they are approved and accredited organizations. Consequently, they might not need to rely on history for approval by a broader audience. Fourth, in both fields written references to geographic locations are common. As

indicated by figure 13 and table 11, written location names are scattered throughout each of these two fields (red nodes).



Examples:

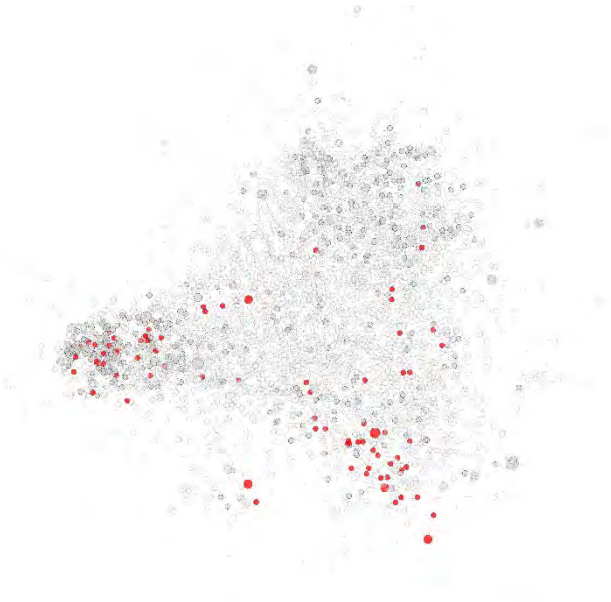
Health care:

Malteser
…weil Nähe zählt.

Organic food:

Upländer BAUERN MOLKEREI

Figure 12. Old-fashioned images. *Dark magenta = traditional / old-fashioned / classic / elegant.*



Examples:

Health care:

CHARITÉ
UNIVERSITÄTSMEDIZIN BERLIN

Organic food:

KRÄUTERGARTEN POMMERLAND

Figure 13. Written geographical reference. *Light gray = no, red = yes.*

Field/Main activity	*Health care*	*Organic food*	*Software*	*Interstitial space*
Geographical reference	48.42%	14.61%	5.11%	20.87%
Non	51.58%	85.39%	94.89%	79.13%

Table 11. Written geographical reference. *The percentages are of the total visuals coded of a particular field.*

Although the members of these two fields share common elements, we argue that the meaning of the elements differ across fields, emphasizing the equivocality of symbols (Eisenberg, 1984). First, both fields use family names in the organizations' names, yet the underlying meaning is different. A family name in organic food emphasizes that it is a family business. Often this signals the generations that have preceded the current owner/leader, or the organization's history, the (aspired) longevity of the organization, and the traditions conserved in the organization (Casson, 1999).

In the field of health care, the use of a family name is often reserved for small or single person practices, and a sign of the profession. That it is a sign of the profession is also highlighted by the name often being accompanied by the title (e.g., "Dr."). Family succession, unlike in the organic food field, is only possible if the physician's heirs obtain medical training and license. Consequently, the family name used in health care is unlikely to indicate the generations that have preceded or those that are expected to follow the current owner. Hence, the family name does not symbolize a family business and tradition in health care, but rather the professional accreditation of the individual physician.

Second, the written geographic reference in organic food and health care have different functions. Although both are likely to indicate the location of the organization, for a health care organization it might be a more important element to distinguish the organization from similar organizations and an important identifier. That is, because larger health care organizations, such as hospitals and universities, often have an easy to recognize and generic name they need an addition that distinguishes the organization from others in the field. Hence, for a "University clinic" it is important to highlight its unique feature, which is often tied to its location (e.g., "Universitätsklinikum Bonn" or "Universitätsklinikum Berlin") to help audiences in their categorization and choices. For organic food organizations, the written geographic reference likely relates to the underlying ideology of the field, locally sourced and produced products and transparency about the origins of products.

Shared elements between the organic food and software fields

We observed the use of references to market positions as a common element between the members of the organic food and software fields. Figure 14 and table 12 illustrate the different choices like "original/first/pioneer" (lime nodes), "unique/one & only/best/finest/special" (pink nodes) and "other position" (sienna nodes). The relatively frequently occurring "other" indicates the variety and creativity of elements that refer to a

market position. Noteworthy, in health care there is very limited mention of the organization's market positioning which is due to regulations preventing various claims such as being the "best". The organizations in health care that do use such a claim, are suppliers, for instance of medical software.

***Figure 14. Market position**. Light gray = No position, lime = original/first/ pioneer, pink = unique/one & only/best/special/finest, sienna = other position.*

Field/Market position	*Health care*	*Organic food*	*Software*	*Interstitial space*
Original		2.19%		
Unique		1.64%	2.14%	
Other	1.06%	2.73%	2.14%	5.11%
Non	98.93%	93.44%	95.71%	94.89%

***Table 12. Market position.** The percentages are of the total visuals coded of a particular field.*

So while in software and organic food the claim to a market position aims to highlight the authority of that organization in its field, health care organizations are prohibited by German law from doing so and thus these elements' disuse in the health care field. Interestingly, in the interstitial space a considerable number of organizations also make a claim to a market position, while these organizations are not recognized central members of a field – rather they span fields. This observation alludes to a dissonance between the meaning these organizations convey and their structural position in the field.

Field specific elements

In addition to the elements shared by all fields and those shared by two fields, we also observed field specific elements. These elements were shared by some of the organizations within a field and rarely appeared in the other fields. These elements relate to the field's collective visual identity and meaning frameworks, thus differentiating fields from one another. We already noted that all three fields make textual and visual references specific to the main activity of the field (see figures 2 and 3). Here, we will elaborate on some other elements that are field specific.

Health care. In the health care field, we observed it to be a common practice to use a combination of a full name and an acronym in the visual, see figure 15 and table 13. Furthermore, we observed the widespread use of textual and visual references to the medical profession, as aformentioned. For instance, visual depiction of crosses, medical supplies, or the caduceus.

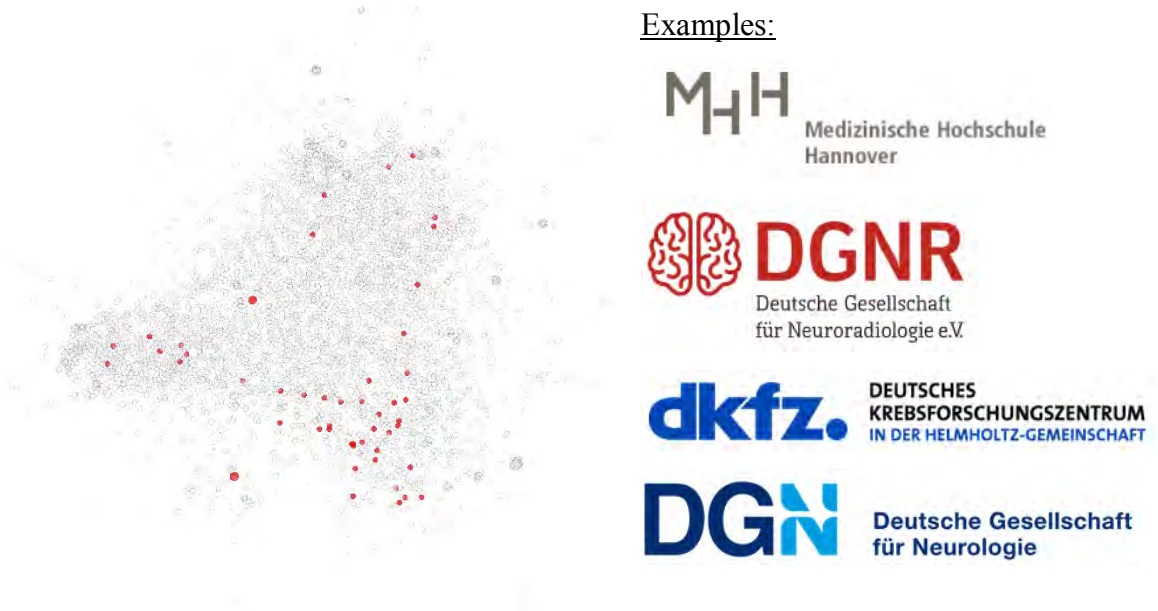


Figure 15. Organization name. *Red = full name and acronym.*

Field/Name	***Health care***	***Organic food***	***Software***	***Interstitial space***
Acronym	8.89%	4.97%	12.77%	3.55%
Full name	56.67%	85.08%	69.50%	69.42%
Full name & acronym	30.00%	3.87%	6.38%	15.82%
Full name & translation		0.55%		1.96%
Non	4.44%	5.52%	11.35%	9.7%

Table 13. Organization name. *The percentages are of the total visuals coded of a particular field.*

Organic food. Organizations in the organic food field seem to show the most heterogeneity within the field in the elements used in their visual identity. Yet, we observed some field specific characteristics. First, we observed the use of multiple fonts by organizations in the organic food field. That means that in one image they use two or more different fonts, for instance, sans serif and serif. We included figure 16 to give an example for the use of multiple fonts by organizations in the organic food field, the distributions can be found in figure 8 and table 7. This is interesting, as fonts convey meanings beyond the linguistic words they represent (Brumberger, 2003; Leeuwen, 2011), combining different fonts might represent the complex and different identities of the organizations within the organic food field and the field as a whole. Sans serif fonts, for instance, signal discipline and efficiency (Leeuwen, 2011), while more playful fonts (e.g., Comic Sans) signal friendliness and informality (Brumberger, 2003). A combination of fonts then, might signal both discipline and efficiency, while also depicting the organization as friendly and accessible.

Second, members of the organic food field are more prone to use earth tones, than members of other fields. Not surprising, they also include references to flora, such as flowers, trees, corn, and wheats. We also observed visual references to landscapes and the local region, the distributions are presented in figure 9 and table 8. Furthermore, members of the field use visual and textual references to their activities. In addition, a subset of members use references to the seasons, mostly references to spring or summer, see figure 17 and table 14.

Figure 16. Multiple fonts. *The name of the organization has a playful font, while the claim uses a sans serif font.*

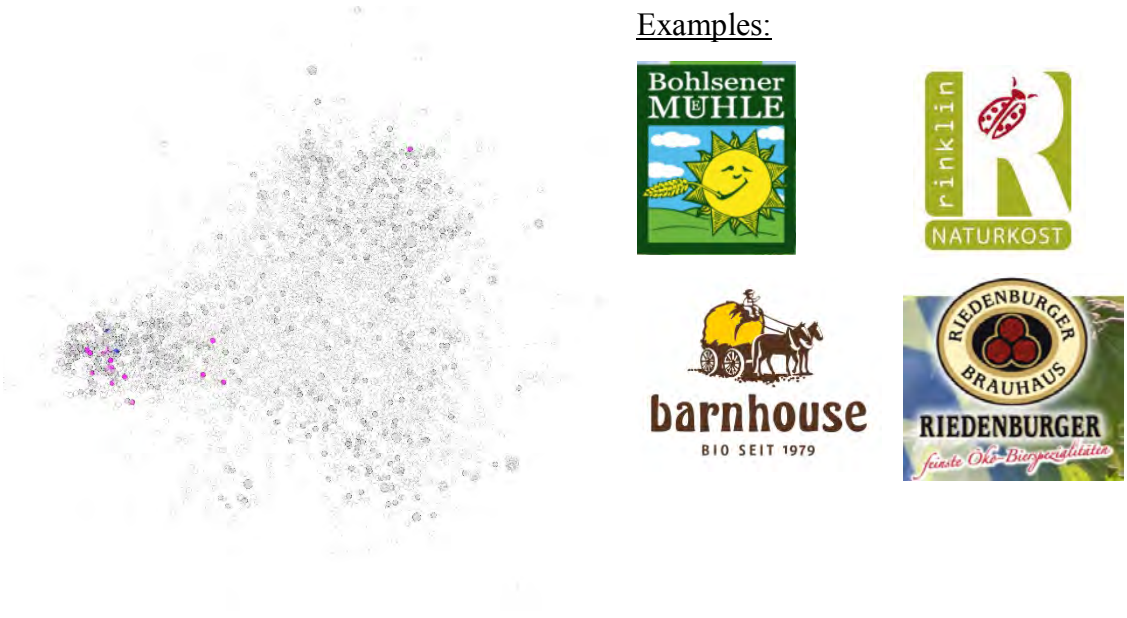
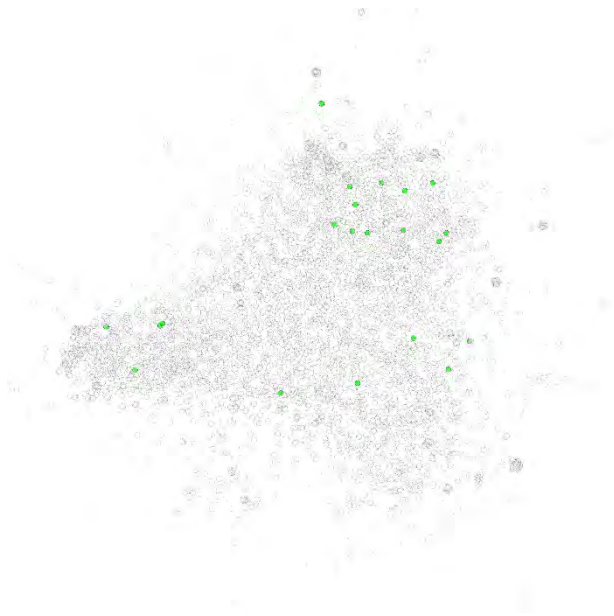


Figure 17. Visual references to seasons. *Magenta = summer or spring, blue = winter, grey = no reference to seasons.*

Field/Season	*Health care*	*Organic food*	*Software*	*Interstitial space*
Summer		6.15%	0.69%	2.22%
Winter		1.12%		0.00%
Non	100.00%	93.86%	99.31%	97.78%

Table 14. Visual references to seasons. *The percentages are of the total visuals coded of a particular field.*

Software. In the software field we observed indicators of field specific professions. These indicators relate to the depiction of software engineers, or computer related artifacts or textual claims to the main activity. Noteworthy is also the use of acronyms in the software field. Whereas in other fields the use of full name or full name and acronym are common, in the software field we also observed the use of acronyms alone. In addition, we noticed the use of claims in English in the software field, see figure 18 (and table 4 above) for the distribution and an example.



Examples:

EuroShop Trade Fairs
EuroCIS
The Leading Trade Fair for Retail Technology

Figure 18. Claims in English.

The field specific elements highlight what are the distinctive, central, and enduring elements of the collective identity and represent agreement by a majority of the field members studied concerning the collective visual identity (Glynn, 2008; Grodal, 2018; Lamont, 1992; Lamont & Molnár, 2002; Wry et al., 2011; Zietsma et al., 2017; Zietsma & Lawrence, 2010). Furthermore, these elements are recognized by members of other fields as not belonging to their own fields. More specifically, not all members of a particular field use all of the field specific elements – given that part of the uniqueness of organizational identity stems from the possibility to combine certain elements from the field's "tool kit" or visual register and forego others (Glynn, 2008; Powell, 1991) – but rarely are these elements used by organizations belonging to another field. For instance, some organizations in the organic food field make a reference to a season, but, except for one organization in the software field, none of the organizations in health care or software make a reference to a season. The field specific elements are those that are central and distinctive for one field, yet of limited use for other fields or their use is mandated by law (e.g., the written reference to the medical profession), disallowing use by members of other fields. The core symbolic boundaries form around these elements, but as we have seen more fluid boundaries form around the vocabulary shared by two fields and disappear when we look at the vocabulary shared by all fields. Yet, the elements shared by all fields are not less central (but less distinctive), as they emphasize necessary elements to be a legitimate organization in the wider institutional context. These elements, displaying a full name, using a present style, and claims in German,

etc., are necessary prerequisites to be recognized as an organization (instead of a natural person, blogger, etc.) in the German context. The need to be recognized as an organization, and not another entity or object, has been taken for granted (see Zerubavel, 2018), but is not less important than being recognized as a member of a specific field. Our findings are summarized in table 15.

			Software	Health Care	Organic Food	Field specific element	Overlap two fields	Shared by all fields
Style elements	***Font***	*Sans serif font*	•	•			*	
	Font	*Multiple fonts*			•	*		
	Graphic style	*Varying styles of visual elements*	•	•	•			*
	Color	*Earth colors*			•	*		
Content elements	***Main activity***	*Visual/textual reference to main activity "software"*	•			*		
	Main activity	*Visual/textual reference to main activity "health care"*		•		*		
	Main activity	*Visual/textual reference to main activity "organic food"*			•	*		
	Name	*Full name*	•	•	•			*
	Name	*Family name*		•	•		*	
	Name	*Acronym*	•			*		
	Name	*Full name & acronym*		•		*		
	Claim	*German claim*	•	•	•			*
	Claim	*English claim*	•			*		
	Geography	*Textual reference to geography*		•	•		*	
	Geography	*Visual reference to globes/continents*	•	•			*	
	Geography	*Visual reference to landscapes*			•	*		
	Awards	*References to awards*		•	•		*	
	Market position	*References to market position*	•		•		*	
	Time	*Reference to time*	•	•	•			*
	Nature	*Reference to flora*			•	*		
Gestalt element	***Gestalt***	*Past style*		•	•		*	
	Gestalt	*Present style*	•	•	•			*

Table 15. Overview results.

DISCUSSION

Prior studies have found how the meaning frameworks shared by members of an organizational field result in a collective identity and symbolic boundaries (Glynn, 2008; Glynn & Abzug, 2002; Glynn & Marquis, 2006; Navis & Glynn, 2010). These studies have focused primarily on one organizational field. We studied three fields which we assumed are disconnected, to explore how the meaning systems of different fields are distinct from one another and how they overlap. We find support to prior studies' conclusions, identifying that certain elements of the visual vocabulary are field specific. For instance, software organizations are more prone to use acronyms and claims in English. Health care organizations tend to use an acronym and full name. Organic food organizations include references to flora and seasons, and often use earth tones in their visuals, among other

distinctive elements. These elements will aid the categorization of organizations and their membership in distinct fields and establish robust symbolic boundaries between fields.

However, we also observed elements that are shared by all three fields, such as the use of a full name, claims in German, and TADs. These shared elements are derived from the wider institutional context these organizations share. For instance, for all organizations it is important to be recognized and identifiable, hence the use of a full name. However, depending on the wider institutional environment, we would also expect differences in elements shared by all organizations. We observed the use of claims in German, as the organizations in our sample are all located in Germany and are likely to have a substantially sized audience that is German speaking. If we would have conducted this study in France or Spain, we most likely have observed little to no claims in German but instead the predominance of claims in French or Spanish, respectively.

Furthermore, we found elements that are shared by organizations belonging to different fields. This finding indicates that the symbolic boundary may be somewhat permeable and that a part of a field's meaning framework overlaps with other fields, or that a focal field's vocabulary (Loewenstein et al., 2012), or visual register (Höllerer et al., 2013; Jancsary et al., 2017), is borrowed or appropriated by another field. In other words, some elements are specific to the field vis-à-vis one field, but are shared with another. For instance, the use of family names is common in both the fields of health care and organic food, but not in the field of software. Hence, "family name" might be a boundary between health care and software, but not between health care and organic food. Software and health care share the use of sans serif fonts and visual references to globes and continents. Health care and organic food have several elements in common: the use of family name, references to awards, images in past styles, and written geographic references. Organic food and software share references to market position. The organic food and health care fields have relatively more elements in common than with the field of software that can be attributed to an overlap in underlying beliefs central to both fields. Both fields are concerned with wellbeing and physical care of individuals. Some organic food organizations also provide natural medicines to help with treating ailments. Furthermore, a subset of the connecting organizations between organic food and health care, are alternative medicine practices ("Heilkunde").

These findings indicate that certain elements can travel across boundaries into other fields. We call these elements *symbolic bridges*, as they represent and signify an underlying meaning (Pierce, 1980; Rafaeli & Worline, 2000) and span organizational fields' boundaries. Interestingly, whether an element can become a symbolic bridge is not contingent on whether

it is a style, content, or Gestalt element; we have observed instances of symbolic bridges belonging to all three categories. However, some elements appear to be symbolic bridges, but their underlying meaning differs. Thus, elements that appear the same but differ substantively when used in other fields represent *false friends*.

Symbolic Bridges

We define symbolic bridges as elements that can travel across field boundaries, hence are used in different fields maintaining the same underlying meaning. For instance, the use of sans serif by organizations in the fields of health care and software, relates to both fields' focus on professionalism. As aforementioned, sans serif fonts indicate clarity, discipline, and efficiency (Leeuwen, 2011). Software organizations' main audiences are businesses and professionals, a neat and professional font symbolizing clarity, discipline, and efficiency will resonate with those audiences and what they look for in software providers. Although health care organizations target a different audience, mainly patients and professionals, the audience is appreciative of the same characteristic - professionalism. A doctor that does not conform to expectations and chooses for instance a loose and fun font, risks being perceived as a joke and not capable.

Another example of a symbolic bridge is the creation of images in a past style in the fields of health care and organic food. This element is likely to relate to and evoke the histories and traditions of the respective fields in order to create legitimacy that is grounded in history. The use of past style images highlights that these fields value history, while in software greater value might be attached to progress and the future. In both the organic food and health care field we also observe the use of references to awards. Most likely, this element shares the same meaning, that of claimed excellence, in the respective fields. Similarly, members in organic food and software fields have in common the sporadic reference to a market position (e.g., "the best"), a practice forbidden by German law in health care. In the interstitial space between the fields we also observed references by actors to market position, while the structural position of these organizations does not reflect that they are recognized as central, high performing members.

False Friends

Analogous to its use in linguistics, the term false friends indicates elements used in different fields that appear to be similar, but differ in their underlying meaning. An example of potential false friends are visual references to globes and continents in the fields of

software and health care. The imagery of a globe can indicate the world we live in, often highlighted by the use of spheres, or the world as a separate entity that is observed from the outside – like an astronaut observes it from space (Ingold, 1993). In the former view, the organization might place itself in the center of the sphere, with an ambition to have a 'global reach', both in terms of audience and operations. In the latter view, the globe is an object of focus, an entity that can be studied. For software organizations, the former view signaling broad reach may be a motivation to use globes. Since at the core of software is the idea of not being bound to a physical geographic location, software organizations may fairly easily operate globally and reach a global audience. In that sense, the use of globes is in line with the increasing globalization of economic activity (McHaffie, 1997). This is also in line with the lack of textual references to a specific geography in the field of software, which would have anchored the organization in a particular location. For health care organizations, the latter view of a globe as an entity for study might be more applicable. Although in theory health care organizations may have the ambition to reach a global audience, health care in practice is often organized, practiced, and sought out locally – especially when time is of the essence. Yet, it is a scientific discipline seeking to explain, prevent, and cure diseases and ailments that occur globally. In that sense, a globe in the field of health care may represent an object to be studied.

Elements shared by members of the fields of health care and organic food often have different meanings, even though the element appears to be the same. This might indicate that the elements are appropriated and adjusted in the process of transposition from one field to another. For instance, organizations in both fields use family names. As mentioned previously, in health care this is related to the profession and its regulation – only after obtaining a degree and license a physician can call his or her practice "Dr. *Name*". In the field of organic food, regulations are less strict, and individuals are relatively free to use a family name and start an organization. Furthermore, in organic food an organization carrying a family name is often a family business. Consequently, the family name may come to represent the organization's history and longevity. In the field of health care this is less likely, as children and spouses must independently obtain their degree and licenses to become certified health care professionals, before an organization can be passed on to a family member.

Another element shared by members in both fields, but which appears to be a false friend is a textual geographic reference. Indeed, in both fields it often indicates the location of the organization. However, in organic food the location can be informative about the quality

that can be expected to be delivered by the organization, due for instance to differences in soil and regional specialization in particular food products. Furthermore, it serves as a local anchor and a possible sign of authenticity (Beverland, 2006; Napoli et al., 2014). That is, the use of a textual reference to a geographic location grounds the organization in a specific place. Furthermore, authenticity can be derived from several dimensions, most known is authenticity derived from history and tradition. However, authenticity can also be derived from a location, if the organization shapes and has been shaped by ideas of what it means to belong to a specific geographic location (Jones & Smith, 2005). For health care providers, the location is less likely to indicate quality or authenticity, the license to operate is intended to guarantee the quality of the organization. Rather in health care the reference to location is more likely to distinguish organizations from one another in instances where organizations have a generic name, e.g., "University clinic Bonn" and "University clinic Berlin".

This paper is to our knowledge the first empirical investigation of meaning systems across multiple fields. We found that several elements, relating to style, content, and Gestalt can travel across field boundaries in other fields. This is interesting as prior studies have assumed that symbolic boundaries are rather impermeable and rigid (DiMaggio & Powell, 1983; Fligstein & McAdam, 2012; Grodal, 2018; Wooten & Hoffman, 2008). Rather, we found a more complex instantiation of symbolic boundaries such that they vary and encompass, one, two, or three fields. We found that the symbolic boundaries encompassing all three fields are formed by more abstract and general elements embedded in a higher order institution, such as national culture, for instance the use of full names or the use of TADs. In addition, we found that elements that span two fields either carry the same meaning, which we refer to as symbolic bridges, or a different meaning, which we call false friends. Symbolic bridges are elements used by fields in a similar manner, signaling comparable meaning, for instance professionalism. False friends on the contrary, are used in multiple fields but do not signal similar underlying values, for instance the use of family names. Indeed, we also found elements that are field specific, in accordance with prior research.

Prior studies on isomorphism have highlighted how practices get adopted, legitimated, and diffused, within a field (e.g., Dacin, 1997; DiMaggio & Powell, 1983; Glynn & Abzug, 2002). Bourdieu's (1979; 1985) concept of homology explains that we can observe similarities across fields, as actors that occupy similar status and positions in different fields make similar choices. Studies on vocabulary and visual registers highlight how elements are diffused across field boundaries, because they are either appropriated or belong to a much wider institutional domain than the field (e.g., Jancsary et al., 2017; Loewenstein, 2014). We

add to these studies by a first exploration of how elements travel across field boundaries, either as symbolic bridges or false friends.

CONCLUSION

An organizational field is a group of organizations "that partake of a common meaning system and whose participants interact more frequently and fatefully with one another than with actors outside the field" (Scott, 1995a, p. 56) in a "recognized area of institutional life" (DiMaggio & Powell, 1983, p. 148). A field is demarcated by its symbolic and social boundaries. Symbolic boundaries are the specific meaning systems social actors construct to categorize objects, people, practices, time, and space (Lamont & Molnár, 2002). Social boundaries are the social differences that are manifested in unequal access to and distribution of resources and opportunities (Lamont & Molnár, 2002). Hence, scholars are concerned with the permeability of boundaries (e.g., Ashforth & Mael, 1989; Brewer, 1993), since boundaries protect the collective identity and constitute resource advantages (Evans & Kay, 2008; Grodal, 2018).

Studies of field boundaries emphasized the purpose of boundaries to create distinctions between the in- and the outgroup (Bowker & Star, 2000), and define the practices that are appropriate for members to engage in (Glynn, 2008; Glynn & Abzug, 2002; Glynn & Marquis, 2004). Field boundaries are protected and maintained, because of the resource advantages they may offer (Abbott, 2005; Furnari, 2016; Lamont & Molnár, 2002; Lamont & Fournier, 1992) and to claim jurisdiction over domains of activity (Abbott, 1988; Holm, 1995; Loewenstein, 2014). Although some studies have focused on the (re)construction, change, contestation, and spanning of field boundaries (e.g., Greenwood & Suddaby, 2006; Zietsma & Lawrence, 2010), inherent in most studies is the (implicit) notion that boundaries are difficult to cross if not altogether impermeable. Consequently, organizational fields are thought of as independent and autonomous domains (Fligstein & McAdam, 2012).

Our study contributes to current understanding of organizational field boundaries as we found that certain elements belonging to the symbolic realm, specifically visual vocabulary, are shared between fields. Indeed, in the comparison of the software, health care, and organic food fields, we found several *boundaries*. Boundaries that demarcate each of the specific fields, boundaries indicating overlap between two fields, and boundaries emphasizing the commonalities among all organizations. In that sense, we show that the symbolic boundary of a field can be in some instances permeable and not necessarily rigid as prior studies suggest. However, we make a distinction between elements that can travel to

different fields and maintain their meaning and those that have different meanings in different fields. The former we define as symbolic bridges while when elements appear to be similar but have a different meaning, we refer to them as false friends.

In line with prior studies on field specific boundaries and meaning frameworks, we found several elements that are specific to each field (see table 17). Most of these elements relate to *content* – those elements in an image that convey specific information to audiences. For instance, the use of visual and textual references to a field's main activity. We have not found an overall "Gestalt" element that relates to a specific field. Hence, Gestalt elements are more likely to travel across boundaries to other fields or be derived from the wider institutional context. Furthermore, where software and health care share style elements, members of the organic food field have claimed certain style elements to be specific to the field, e.g., the use of earth tones and multiple font styles. The field specific elements highlight those aspects that create a potentially impermeable boundary. However, many more elements are shared between fields – relating to style, content, and Gestalt. Interestingly, we did not observe a clear pattern in what type of element (e.g., style, content, or Gestalt) is more likely to function as a symbolic bridge. However, our results do highlight that content elements are more likely to be false friends than style and Gestalt elements.

Our study also has several limitations that provide opportunities for future research. First, we compared only three fields that we assumed at the outset to be disconnected. Therefore, we might have categorized some elements which are symbolic bridges or false friends, as field specific. Studying other organization fields, may show that these elements are not field specific but shared with fields that we have not studied. However, this does not change the central contribution of this study, namely, certain elements can cross field boundaries and they do so in different forms. Yet, future research could focus on related fields to study whether symbolic bridges and false friends are shared between these fields and under what conditions. Second, our methods rely on high-levels of mutualism and the assumption that organizations have websites to reconstruct the fields. Although these three fields indeed show mutualism and we were able to reconstruct the fields, we may have excluded organizations that are field members but do not have an online presence. Future research could consider other manners to reconstruct the field incorporating organizations without a website. Third, we based the classification of elements as symbolic bridges and false friends on our interpretive observations of the logos we collected and on prior literature on the meaning of different symbols and practices in fields. Future research should conduct an in-depth study about the intended and interpreted meaning of these symbols in the

different fields. Fourth, the cross-sectional approach of our investigation gave us the opportunity to compare organizations in three fields on a relatively large scale. It allowed us to study which elements are shared and which are not. However, we cannot make any claims about the origins of an element, whether elements originated in two fields simultaneously, or whether a field appropriated an element from another field. Similarly, although we can observe the diffusion of elements, we cannot make claims about how they diffused. Future research could take an in-depth longitudinal approach to study the diffusion and constellation of elements within a field and across field boundaries. Such a study would integrate the form in which elements cross field boundaries, with actors and institutions that facilitate the elements' journeys across these boundaries.

APPENDIX A

Questions and answer options coding survey

In addition to the listed answer options on the following pages, each question had the answer options ‘unreadable’ and ‘unclear’.

Question	Element type	option 1	option 2	option 3	option 4	option 5	option 6	option 7	option 8	option 9	option 10	option 11	option 12	option 13	option 14
Do you see references to natural environment?	**content**	Mountain	River	Fields	Sea	No reference to environment									
Which kind of movement do you observe?	**content**	Rising	Mingling	Moving from left to right	Oscillation	Swoosh	Opening /closing	Rotation	Spreading	Swirl	No movement	Arrow - upward	Arrow - downward	Arrow - left to right	Arrow - right to left
Is a light-emitting element visible?	**content**	Flame	Sun	Star	Candle	Lamp	Beacon	No light emitting element							
Any images of general research tools?	**content**	Book	Quill	Reading	No general research	Unclear	Unreadable	Microscope	Computer/laptop						
Do you see religious symbols within the visual?	**content**	Christian	Jewish	Muslim	Taoic religion	Dhamic religion	Other	No religious symbol							
Any reference to flora?	**content**	Leaf decoration	Single leaf	Flower	Tree	Wheat / corn	No flora reference								
Do typical award-elements occur?	**content**	Ribbon	Crest	Garland	Ribbon + Garland	Ribbon + Crest	Bow	No award-like elements	Laurel wreath	trophy					
Any royal references in the visual?	**content**	Royalty	Lion	Sword	Shield	Lance	Crown	Multiple royal references	No royal reference						
Is there a geographical reference in the visual?	**content**	Globe	Continent contour	Country contour	Landscape	Building	No geographical element								
Are people in the visual?	**content**	Royals	Church	Laborer	Performer	Thinker	No people	hand	eye	foot	head	other			

Question	Element type	option 1	option 2	option 3	option 4	option 5	option 6	option 7	option 8	option 9	option 10	option 11	option 12	option 13	option 14
Are any technical elements visible?	**content**	Atom	Cog Wheel	Measurement	Beaker	Tools for farmers	Multiple tech elements	Transportation	No technical element	networks	cutlery				
Any sign of profession in the visual?	**content**	Justice	Medicine	Business	Engineering	Information Tech.	Natural sciences	Humanities	Many disciplines	Other	No profession	Baker	Chef	crafts	
In which style are visual elements created?	**content**	Figurative style	Minimal	Abstraction	Photo	No visual element	Unclear	Unreadable							
Does the visual contain a traditional form?	**content**	Seal	Shield	Flag	Other tradition	Non-traditional	Unclear	Unreadable							
Is there a written reference to a geographical location in the visual, such as a city name?	**content**	Yes	No	Unclear	Unreadable										
Is there a reference to time included in the visual?	**content**	Seit	Gegründet	Since	Est.	Established	Founded	Generations	Future	Present	Other	past	Only a year		
Is there a reference to a season?	**content**	Winter	Spring	Summer	Autumn	No reference to season									
Is there a mention of the organization's position in the organizational field?	**content**	Original	First	Unique	One and only	Best	Other	pioneer							
Is their a reference to time measuring or planning in the visual?	**content**	Clock Analogue	Clock digital	Calendar	365 (days)	Speedometer	Watch	Other	no time measuring/planning reference						

Question	Element type	option 1	option 2	option 3	option 4	option 5	option 6	option 7	option 8	option 9	option 10	option 11	option 12	option 13	option 14
Is a food-product visible in the visual?	**content**	Cake/ pie	bonbons /pralines	sweet(s)	salty snack(s)	pastries	other chocolate product	vegetable(s)	fruit(s)	meat/chicken	dairy product(s)	Other	bread	Fish	
Is it stated in the visual what the organization's main activities are?	**content**	software development	webdesign	bakery/konditorei	heilkunde/heilpraktik	medicine	no	other							
Are typical time indicating or measurement tools visible in the visual?	**content**	Ruler	Clock	Flag	Progress bar	Speedometer	no	stopwatch							
Is the organization's name represented in the visual?	**content**	Entire name is visualized	Part of the name is visualized	Parody on the name is visualized	no										
What kind of visual is this?	**Gestalt**	Traditional	Futuristic	Modern	Old-fashioned	Present-day	Classic	Hipster							
What is your general impression of the visual?	**Gestalt**	Funny	Cute	Professional	Serious	Original	Boring	Amateurish	other						
What is the outer form of the logo?	**style**	Circle	Shield	Rectangular	Star	No boundary									
How is color handled?	**style**	Black-White	Two colors	Multi-color separated	Multi-color with mixtures										
How are visual and text combined?	**style**	Visual left - Text right	Visual above - Text below	Text fully embedded in visual	Text surrounding visual	Text decorated with visual elements	Text left - Visual right	Visual below text	Only visual - No text	No visual - Just text					
Does the logo contain a claim?	**style**	Motto in Latin	Motto in English	Motto in German	Motto in French	Motto in Spanish	Motto in other language	No motto							

Question	Element type	option 1	option 2	option 3	option 4	option 5	option 6	option 7	option 8	option 9	option 10	option 11	option 12	option 13	option 14
Is the organization's name included in the visual or in the text?	**style**	Full name - no acronym	Full name + acronym	Acronym	Name + translation	Name + translation + acronym	No name								
Which fonts are used?	**style**	Serif	Sans serif	Serif and sans serif	No font	handwritten - old style	handwritten - modern style	antroposofic font	minimal font	classic font	modern font	playful font			
How does the background look like?	**style**	White	Full color	Pattern	Photo	Gradient									
Do you recognize an inner form?	**style**	Circle	Shield	Rectangular	Star	No inner boundary									
Does the logo include a family name?	**style**	Yes	No	Unclear	Unreadable										
What color-scheme is used in the visual?	**style**	Pastel colors	Bright colors	Dark colors	Earth tones	Mainly white	warm colors	cool colors	Black-white						

APPENDIX B

Overview all codes

Question-answer	Health care	Organic food	Software	Interstitial space
ANIMAL_FARM		6.08%		
ANIMAL_GEN	5.62%	3.31%	2.13%	0.74%
ANIMAL_INSECT		3.31%	0.71%	
ANIMAL_NON	86.52%	86.19%	95.04%	94.81%
ANIMAL_UNCLEAR		0.55%	0.71%	0.74%
ANIMAL_UNREAD				3.70%
ANIMAL_WILD	7.87%	0.55%	1.42%	
ANNIVERSARY				7.41%
Anniversary/age statement		1.08%	1.44%	12.22%
AWRD	5.21%	3.33%	0.70%	0.68%
AWRD_NON	93.75%	95.56%	97.20%	96.29%
AWRD_UNCLEAR	1.04%	1.11%	0.70%	3.03%
AWRD_UNREAD			1.40%	
BACK_FULL	24.18%	30.39%	37.04%	17.47%
BACK_GRAD	1.10%	6.08%	5.19%	1.45%
BACK_MIX	1.10%	5.52%	0.74%	1.45%
BACK_PATTERN		6.08%	1.48%	3.53%
BACK_PHOTO	3.30%	6.08%	0.74%	2.08%
BACK_UNCLEAR	1.10%	4.97%	2.96%	0.72%
BACK_WT	69.23%	40.88%	51.85%	73.29%
BODY_BRAIN	1.11%			
BODY_EYE	1.11%		0.72%	
BODY_FULL			1.45%	2.08%
BODY_HAND	1.11%	0.54%	0.72%	
BODY_HEAD	5.56%	0.54%	0.72%	
BODY_LIMBS		0.54%		
BODY_NON	88.89%	96.76%	95.65%	92.76%
BODY_OTHER	1.11%			
BODY_TORSO		0.54%		1.42%
BODY_UNCLEAR	1.11%	0.54%		3.74%
BODY_UNREAD		0.54%	0.72%	
CLOCK_NON	100.00%	100.00%	98.55%	10
CLOCK_UNCLEAR			0.72%	
CLOCK_UNREAD			0.72%	
COL_BW	21.05%	10.00%	20.00%	23.26%
COL_MULTI	54.74%	60.00%	48.57%	40.31%
COL_TWO	22.11%	28.33%	30.71%	36.43%
COL_UNCLEAR	2.11%	1.11%		
COL_UNREAD		0.56%	0.71%	
COLSCH_BRIGHT	100.00%	100.00%	100.00%	10
COLSCH_BW	20.55%	14.93%	24.07%	39.32%
COLSCH_COOL	43.84%	13.43%	30.56%	16.67%
COLSCH_DARK	2.74%	9.70%	17.59%	8.12%

COLSCH_EARTH	4.11%	35.82%	6.48%	16.24%
COLSCH_PAST	1.37%	2.24%	0.93%	0.85%
COLSCH_UNCLEAR	6.85%	6.72%	4.63%	5.13%
COLSCH_UNREAD			0.93%	
COLSCH_WARM	10.96%	14.18%	12.04%	8.55%
COLSCH_WHITE	9.59%	2.99%	2.78%	5.13%
DARK	2.11%	9.44%	17.65%	11.17%
DARK_NON	97.89%	88.89%	80.15%	86.74%
DARK_UNCLEAR		1.11%	2.21%	2.08%
DARK_UNREAD		0.56%		
DIGI_BITS	2.15%		3.60%	3.75%
DIGI_NETWORK			2.16%	0.72%
DIGI_NON	92.47%	98.33%	82.73%	85.16%
DIGI_OTHER		0.56%	7.19%	1.96%
DIGI_PARTS		0.56%	1.44%	1.45%
DIGI_UNCLEAR	5.38%		2.88%	3.92%
DIGI_UNREAD		0.56%		3.03%
FAM_COMP	6.25%	10.38%	0.70%	14.65%
FAM_NO	92.71%	78.14%	97.18%	70.27%
FAM_UNCLEAR		8.20%		5.81%
FAM_UNREAD		0.55%	0.70%	
FAM_YES	1.04%	2.73%	1.41%	9.28%
FIELD_BAKERY		1.08%		
FIELD_BIO	1.05%	32.26%	0.70%	3.70%
FIELD_COMP	2.11%		23.24%	11.85%
FIELD_FOOD		23.66%	0.70%	6.67%
FIELD_HEILKUNDE	4.21%			4.81%
FIELD_MEDICINE	65.26%	0.54%	3.52%	12.22%
FIELD_NON	17.89%	29.03%	52.82%	45.56%
FIELD_OTHER	7.37%	4.30%	8.45%	12.96%
FIELD_UNCLEAR	2.11%	9.14%	9.86%	2.22%
FIELD_UNREAD			0.70%	
FLORA_FARM		5.14%	0.71%	
FLORA_FLOWER		2.29%	0.71%	0.71%
FLORA_LEAF		14.29%	0.71%	5.86%
FLORA_NON	96.88%	68.57%	97.16%	89.69%
FLORA_OTHER		3.43%		
FLORA_TREE	3.13%	3.43%		
FLORA_UNCLEAR		1.71%	0.71%	0.71%
FLORA_UNREAD		1.14%		3.03%
FONT_ANTRO		2.72%	0.71%	1.85%
FONT_HANDNEW		2.17%		1.85%
FONT_HANDOLD		1.63%		
FONT_MIX	6.52%	24.46%	7.09%	16.38%
FONT_NON			0.71%	
FONT_PLAY	1.09%	10.87%	7.09%	3.03%
FONT_SANSSERIF	83.70%	36.41%	74.47%	68.11%
FONT_SERIF	6.52%	18.48%	6.38%	6.92%

FONT_UNCLEAR	1.09%	2.72%	2.13%	1.85%
FONT_UNREAD	1.09%	0.54%	1.42%	
FOOD_BREAD		1.12%		
FOOD_FRUIT		2.79%		1.85%
FOOD_MEAT		4.47%		
FOOD_NON	100.00%	84.92%	97.84%	97.45%
FOOD_OTHER		1.12%		
FOOD_SWEETS		0.56%	0.72%	
FOOD_UNCLEAR		1.12%	1.44%	0.69%
FOOD_UNREAD		0.56%		
FOOD_VEGETABLE		1.68%		
FOOD_WATER		1.68%		
FORM_JUSTT	7.88%	15.00%	14.04%	20.53%
FORM_JUSTV		0.71%	0.85%	0.39%
FORM_NO	42.42%	32.86%	38.30%	43.75%
FORM_TDEC	0.61%	4.29%	4.26%	1.57%
FORM_TINB	2.42%	11.07%	3.83%	3.70%
FORM_TSB	1.82%	2.86%	1.28%	2.86%
FORM_TV_UNCLEAR	1.82%	5.00%	2.55%	1.18%
FORM_TV_UNREAD			0.43%	
FORM_UNCLEAR	0.61%	3.21%	1.70%	
FORM_UNREAD			0.43%	
FORM_VATB	2.42%	9.29%	2.13%	4.04%
FORM_VBTA	1.21%	4.64%	2.13%	0.39%
FORM_VLTR	25.45%	6.43%	24.26%	20.41%
FORM_VRTL	12.12%	2.14%	2.13%	0.78%
FORM_VST	1.21%	2.50%	1.70%	0.39%
FUTURE		1.62%	2.88%	
GEOG_FARM		8.00%		
GEOG_GLOBAL	2.06%	1.14%	2.90%	1.85%
GEOG_LOCAL		1.71%		
GEOG_NON	90.72%	85.14%	93.48%	98.15%
GEOG_OTHER	5.15%	1.71%	1.45%	
GEOG_UNCLEAR	2.06%	1.71%	1.45%	
GEOG_UNREAD		0.57%	0.72%	
GES_CREAT	3.13%	35.61%	8.89%	8.31%
GES_FUTURE	3.13%		7.78%	1.11%
GES_MIX	1.56%	6.06%	2.22%	5.28%
GES_PAST	23.44%	32.58%	8.89%	21.11%
GES_PRESENT	68.75%	25.76%	72.22%	64.19%
HEALTH_CADUCEUS	13.27%		0.70%	0.68%
HEALTH_CROSS	11.22%		1.40%	1.36%
HEALTH_GEN	6.12%	0.54%	0.70%	
HEALTH_NON	63.27%	98.92%	96.50%	95.92%
HEALTH_UNCLEAR	6.12%	0.54%		2.04%
HEALTH_UNREAD			0.70%	
IMGNAM_FULLNAME	8.33%	6.01%	3.57%	9.50%
IMGNAM_NON	65.63%	66.67%	79.29%	71.67%

IMGNAM_OTHER	1.04%	3.83%	1.43%	1.96%
IMGNAM_PARODY	5.21%	3.83%	0.71%	
IMGNAM_PARTNAME	13.54%	16.39%	10.71%	5.40%
IMGNAM_UNCLEAR	6.25%	3.28%	3.57%	11.46%
IMGNAM_UNREAD			0.71%	
IMPRES_APPROPRIATE	11.70%	28.02%	8.82%	17.39%
IMPRES_OTHER	3.19%	3.85%	2.94%	1.96%
IMPRES_TOUCHING	1.06%	0.55%		
IMPRES_UNCLEAR		2.75%	4.41%	3.33%
IMPRES_UNREAD		0.55%	0.74%	
IMPRESS_FUN	1.06%	13.74%	4.41%	4.03%
IMPRESS_NEG	6.38%	23.63%	22.79%	18.23%
IMPRESS_ORIGINAL	7.45%	9.89%	5.88%	4.04%
IMPRESS_SER	69.15%	17.03%	50.00%	51.01%
INFORM	100.00%	100.00%	100.00%	10
INNER_NOBOUN	98.53%	91.80%	95.50%	96.92%
INNER_UNCLEAR	1.47%	7.38%	3.60%	3.08%
INNER_UNREAD		0.82%	0.90%	
LIGHT				1.96%
LIGHT_NON	98.90%	98.29%	98.56%	98.04%
LIGHT_UNCLEAR	1.10%	1.14%	0.72%	
LIGHT_UNREAD		0.57%	0.72%	
MEASURE_NON	98.89%	99.45%	97.74%	98.55%
MEASURE_UNCLEAR	1.11%	0.55%	1.50%	1.45%
MEASURE_UNREAD			0.75%	
MOTO_ENGL	2.11%	1.68%	8.70%	6.81%
MOTO_GER	12.63%	29.61%	13.04%	11.67%
MOTO_NON	83.16%	65.92%	76.81%	80.83%
MOTO_OTHER		0.56%		
MOTO_UNCLEAR	2.11%	1.12%		0.69%
MOTO_UNREAD		1.12%	1.45%	
MOV_ARRDOWN		0.56%	0.71%	1.45%
MOV_ASP	4.26%	7.91%	5.67%	2.58%
MOV_FORWARD	6.38%	7.91%	7.09%	2.90%
MOV_NON	77.66%	74.58%	74.47%	89.77%
MOV_OPEN	1.06%			
MOV_SIRCUL	6.38%	4.52%	9.22%	0.72%
MOV_UNCLEAR	4.26%	4.52%	2.13%	2.58%
MOV_UNREAD			0.71%	
NAM_AC	8.89%	4.97%	12.77%	3.55%
NAM_FULL	56.67%	85.08%	69.50%	69.42%
NAM_FULLAC	30.00%	3.87%	6.38%	15.82%
NAM_NON	1.11%	2.76%	2.84%	3.38%
NAM_TRAN		0.55%		1.96%
NAM_UNCLEAR	3.33%	2.76%	7.80%	5.87%
NAM_UNREAD			0.71%	
NAT_ASP	1.09%	2.66%		0.74%
NAT_FARM		5.32%		

NAT_NO	95.65%	84.57%	97.04%	97.41%
NAT_OTHER	1.09%	1.60%	0.74%	
NAT_UNCLEAR	1.09%	5.32%	2.22%	1.85%
NAT_WATER	1.09%	0.53%		
non	96.77%	87.03%	90.65%	82.22%
null	100.00%		100.00%	
OTHER	1.08%	2.16%	1.44%	0.74%
OUTFORM	100.00%	100.00%	100.00%	10
PAST	4.30%	17.84%	7.19%	8.89%
PEOPL_NON	95.51%	96.65%	97.01%	95.79%
PEOPL_UNCLEAR	1.12%	0.56%		1.42%
PEOPL_UNREAD		0.56%	0.75%	
PEOPLE_GEN	3.37%	2.23%	2.24%	2.79%
PRESENT			1.44%	1.48%
PROF	2.11%	2.26%	2.94%	0.74%
PROF_BUSS			0.74%	
PROF_COMP			2.94%	
PROF_FARM		5.65%	0.74%	
PROF_FOOD		1.69%		
PROF_HUMANITY	1.05%		1.47%	
PROF_MED	22.11%		2.94%	1.48%
PROF_NON	68.42%	87.57%	84.56%	89.63%
PROF_UNCLEAR	6.32%	2.26%	2.21%	8.15%
PROF_UNREAD		0.56%	1.47%	
RELIG	1.10%			
RELIG_CHRIST	3.30%	0.56%	0.72%	0.74%
RELIG_NON	92.31%	97.19%	98.55%	97.78%
RELIG_UNCLEAR	2.20%	1.69%		1.48%
RELIG_UNREAD	1.10%	0.56%	0.72%	
ROYAL	5.38%	1.64%	0.71%	1.48%
ROYAL_NON	94.62%	97.27%	98.57%	98.52%
ROYAL_UNCLEAR		0.55%		
ROYAL_UNREAD		0.55%	0.71%	
RSRCH	4.12%	0.56%	2.16%	
RSRCH_COMP		0.56%		
RSRCH_NON	94.85%	98.32%	97.12%	99.32%
RSRCH_UNCLEAR	1.03%			
RSRCH_UNREAD		0.56%	0.72%	0.68%
SPRING_SUMMER		6.15%	0.69%	2.22%
STY_NEUTRAL	23.81%	18.03%	22.28%	18.38%
STY_UNCLEAR	0.79%	5.33%	5.18%	4.94%
STY_UNREAD	0.79%		0.52%	
STYLE_ABSTRACT	24.60%	12.30%	21.24%	17.56%
STYLE_FIGPHOTO	15.87%	23.77%	10.88%	4.23%
STYLE_MINIMAL	22.22%	17.21%	17.10%	17.82%
STYLE_MIX	0.79%	3.69%	1.04%	0.52%
STYLE_NOPHOTO	7.14%	13.11%	13.47%	23.17%
STYLE_UNCLEAR	3.97%	6.15%	7.25%	13.38%

STYLE_UNREAD		0.41%	1.04%	
SUN		100.00%		
TECH	2.11%	1.10%	1.41%	0.72%
TECH_COMPUTER		0.55%	2.82%	
TECH_FARM		1.10%		
TECH_NETWORK			2.11%	0.72%
TECH_NON	95.79%	97.24%	90.14%	91.16%
TECH_UNCLEAR	2.11%		2.82%	7.39%
TECH_UNREAD			0.70%	
TEMP_ORIGIN		2.19%		
TEMP_UNIQUE		1.64%	2.14%	
TIME_MEAS			100.00%	66.67%
TIMEPER_NON	100.00%	91.62%	99.31%	97.78%
TIMEPER_UNCLEAR		1.12%		
TIMEPER_WINTER		1.12%		
TXTGEORG_NO	51.58%	82.02%	93.43%	78.41%
TXTGEORG_UNCLEAR		3.37%		0.72%
TXTGEORG_UNREAD			1.46%	
TXTGEORG_YES	48.42%	14.61%	5.11%	20.87%
TXTPOS_NON	97.87%	93.44%	93.57%	91.86%
TXTPOS_OTHER	1.06%	2.73%	2.14%	5.11%
TXTPOS_UNCLEAR			1.43%	
TXTPOS_UNREAD	1.06%		0.71%	3.03%
TXTTIME_NON	97.85%	89.73%	93.53%	87.04%
TXTTIME_UNCLEAR		0.54%	0.72%	
TXTTIME_UNREAD			0.72%	

THEIR SWEET TIME: THE USE OF TEMPORAL ANCHORING DEVICES BY THREE CHOCOLATE PRODUCERS

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Abstract

Although the symbolic use of temporal anchoring devices, such as "since 1804", seems ubiquitous among organizations, it has rarely received focused scholarly attention. Through the research reported here, we explore the use of temporal anchoring devices (TADs) by three chocolate producers over the course of their 200-yearlong lifespans. This research design provides us with a unique opportunity to consider how and when organizations may make use of TADs that evoke a connection with the past. Through an interpretive analysis of the use of such TADs in corporate communications we draw a distinction between five forms of TADs, referring to (i) the organization, (ii) buildings and facilities, (iii) anniversaries, (iv) awards and achievements, and (v) products. In addition we observed five purposes for the use of TADs, (i) communicating history, (ii) creating continuity and stability, (iii) foregrounding characteristics, (iv) reinforcing group membership, and (v) marketing. Interestingly, we find that TADs are rarely used consistently throughout an organization's lifespan, but instead are constructed during specific events. In the case of the chocolate producers we studied, we find that TADs were typically constructed during turbulent times in their histories, such as ownership change or geographical expansion. As such, we argue that one common use of TADs is to construct a sense of continuity and stability to counteract detrimental effects of change and uncertainty. Our findings provide cause to think about organizations' use of time related symbols that address both internal and external audiences and the conditions under which they do so.

INTRODUCTION

A substantial body of research has considered the power of organizational symbols (Meyer, 2002; Rafaeli & Worline, 2000). Symbols integrate feelings, thoughts, and actions into shared codes of meaning (Rafaeli & Worline, 2000), helping individuals to understand the world around them and make sense of what they observe (Dandridge et al., 1980; Donnellon et al., 1986; Gioia, 1986; Meyer, 2002; Pettigrew, 1979). In other words, symbols are short and subtle ways for signaling organizational identity (Albert & Whetten, 1985; Dutton et al., 1994; Glynn, 2000) or organizational culture (Hatch, 2004; Schein, 1992) that can powerfully guide organizational sensemaking and everyday interaction (Gioia, Thomas, Clark, & Chittipeddi, 1994; Hatch & Schultz, 2017). The power of symbols and its multiple uses and applications (Gagliardi, 1990; Pierce, 1980), might explain the ubiquitous use of symbols by organizations (e.g., Glynn, 2000; Rafaeli & Worline, 2000; Schultz et al., 2006; Scott, 1995b; Vaughn, 1995). While significant attention has gone to the symbolic use of names (Glynn & Abzug, 2002; Glynn & Marquis, 2006), logos (Rafaeli, Sagy, & Derfler-Rozin, 2008), slogans (Hatch & Schultz, 2017), and artifacts (Schultz & Hernes, 2013), one widely used set of organizational symbols has received limited attention from organizational scholars: these are temporal anchoring devices (TADs), such as "since 1826", that appear ubiquitous but are poorly understood. Hence, our research question: How do organizations use temporal anchoring devices?

We define a TAD as a short reference to time often accompanied by a descriptor that typically appears with the organization's name or its products in various corporate communication formats such as in logos, on buildings or on product packaging. From casual observation, it appears that the use of TADs by organizations is highly prevalent, spanning nations, industries, and cultures. Both large multinationals (e.g. Heineken, Levi's, and the Apache Software Foundation) and small establishments (e.g. local craft manufacturers) frequently make use of TADs. This makes it even more surprising that organizational scholars have so far rarely given focused attention to this practice (for exceptions see Beck et al., 2016; Pecot & De Barnier, 2017; Pecot et al., 2018). Yet, we believe that more dedicated research on the use of TADs can contribute to current understanding of organizations' use of symbols. More specifically, studying TADs provides us with an alternative angle to examine how organizations become explicitly associated with particular time periods and how this may affect the perceptions of various stakeholders.

Though TADs may, in theory, link the organization to the present or the future, most commonly they appear to link the organization to the past. Indeed, they can be considered a

particular example of how the past may be used creatively in and around organizations in a way that may provide strategic benefits (e.g., Anteby & Molnar, 2012; Blombäck & Brunninge, 2009; Brunninge, 2009; Delahaye, Booth, Clark, Procter, & Rowlinson, 2009; Foster, Suddaby, Minkus, & Wiebe, 2011; Pecot & De Barnier, 2017; Pecot et al., 2018; Rowlinson & Hassard, 1993; Suddaby et al., 2010; Zundel et al., 2016). While previous research in this space has typically paid attention to the construction of rhetorical narratives to serve a particular purpose, the use of TADs can be considered as an alternative and highly specific symbol through which organizations may explicitly link themselves to the past.

Through the research reported here, we explore the symbolic use of TADs. We do so, by investigating how and when three well-known chocolate producers with similar, approximately 200-yearlong lifespans, made use of TADs that evoked a connection with their past. For this purpose, we collected rich archival data that included 2,339 artifacts, ranging from advertisements to chocolate wrappers, and to invoices, and examined whether and how TADs appeared on these items. Through an interpretive analysis, we find five forms of TADs and five apparent purposes for which they are used. Interestingly, we find that TADs were not consistently used within or across cases. Instead, their use emerged in relation to specific events and their prevalence varied depending on the organization. This points to specific contextual factors that may inhibit or stimulate the use of TADs for strategic purposes, which is suggestive of TADs being another example of creative use of history and temporal framing more generally.

As such, we see the specific study of the use of TADs as a promising addition to the growing literature on the use of past in and around organizations (Wadhwani, Suddaby, Mordhorst, & Popp, 2018). In addition, we see the study of TADs in both diachronic and synchronic fashion as an important opportunity for researchers to simultaneously explore when organizational actors actually make use of the past and when they may strategically forego the opportunity to do so (Anteby & Molnar, 2012; Casey & Olivera, 2011). With such a comparative approach, like tracing the use of TADs over the course of three organizations' histories, we can start to unpack the complexities in using and *not* using the organization's past as a resource and in which form the past may be used.

We believe this paper inspires future research around the subject of temporal anchoring devices in several ways. First, it encourages a novel approach to exploring the intersection between the use of organizational symbols to express values and evoke history through temporal relations. Our findings suggested that TADs are deliberately constructed when organizations undergo internal changes, such as transitions of owners and leaders, or

external changes, such as through entrance in new markets or institutional transitions. This suggests that TADs are evoked to support a sense of organizational continuity, by evoking history, amidst change that has value to both internal and external stakeholders. Clearly, temporal references are not the only way to create historical connections. For example, one of our cases, Cadbury, hardly made use of any TADs. We therefore think it would be interesting to explore further how organizations may variably mix TADs into their rhetorical history toolkits and to what effect. In addition, we think it would be worthwhile to explore the use of TADs that are deliberately avoiding association with a distant past. For example, Heineken uses TADs to claim that it was established during the Industrial Revolution, while they could have easily claimed that their organization's history dates back to the late Middle Ages when the original brewery that the Heineken family acquired later in the 19th century, was established.

Second, we see opportunity for further exploring the connection between TADs and specific values or emotions that they may evoke. In our study, TADs appear as subtle but seemingly powerful symbolic devices, infused with meaning. For instance, apart from evoking historical images that evoke a sense of authenticity and nostalgia, TADs may also be used for signaling the organizational integrity or status. Future research can explore this further. One form of research, for example, that we think may be particularly insightful is experimental research that examines the effect of TADs in lab settings as this not only allows us a deeper understanding of TADs, but also provides us with a realistic way of manipulating historical referencing more generally to study the link between the use of the past and desired organizational outcomes.

TEMPORAL ANCHORING DEVICES AS STRATEGIC SYMBOLS

Organizational symbolism scholars emphasize the rich meanings of symbols (Dandridge et al., 1980; Vaughn, 1995) and the ability of individuals and organizations that employ symbols to infuse them with meaning (Cohen, 1985). Symbols are a parsimonious, convenient, and accessible way to convey information (Pierce, 1980), leading them to be used to capture many complex, abstract, and metaphorical organizational characteristics (Alvesson, 1991; Bell, 2012; Oswick & Montgomery, 1999), which are difficult to express otherwise. Examples of such characteristics are for instance, organizational history, values, and identity. Given the meaning embedded in symbols and decision-makers ability to affect this meaning and the use of symbols to further organizational needs, symbols can be conceptualized as strategic resources. For instance, in the study by Gioia and Chittipeddi

(1991) on the change at a public university, the CEO himself and his vision (to become a 'top 10 public university') served as symbols to inform audiences that the existing interpretative scheme was no longer appropriate, and consequently facilitated a change process.

Similarly, in a more recent study by Hatch and Schultz (2017) a symbol dating back to the founding of the Carlsberg Group '*Semper Ardens*' ('always burning') was evoked on two separate occasions to serve the needs of the company. First, the symbol was reintroduced to promote and facilitate the introduction of a new craft beer. On a second occasion the symbol was evoked after a large and rapid expansion of the company, including several international acquisitions, to unite the different organizations. In both studies, the symbol used was intended to generate an interpretative framework that would facilitate the actions of the organizations. In the study of Gioia and Chittipeddi (1991) the symbol evoked expectations and images of the future, whereas in the study by Hatch and Schultz (2017) the symbol evoked the past, albeit that the meaning of the symbol on the two occasions it was evoked, differed.

Similar to CEOs and their visions, and mottos like *Semper Ardens*, TADs are symbols, carrying a meaning ascribed to them partly by their audiences and partly by those who use them. Moreover, these studies suggest that, like other strategic symbols, TADs may also be consciously used by organizational decision-makers to evoke positive perceptions amongst organizational audiences. Although the specific forms and purposes of TADs has yet to be examined through focused study, previous research on rhetorical history, organizational values, and organizational identity provides important guidance.

TADs and rhetorical history. The literature on rhetorical history has advanced the view that history is malleable and can serve the organization's current and future needs as effective application may, for example, result in a sustainable competitive advantage (Foster et al., 2017; Godfrey, Hassard, O'Connor, Rowlinson, & Ruef, 2016; Suddaby et al., 2010). For instance, recent studies have described how history aided in defining and delivering a new strategy in the case of Adidas (Iglesias, Ind, & Schultz, 2020), helped introducing a new product and creating unity in the case of the Carlsberg group (Hatch & Schultz, 2017), and allowed Bang & Olufsen to reinvent itself and survive (Ravasi & Schultz, 2006). Collectively, these studies have emphasized the power of historical narratives (e.g. Foster et al., 2017), sometimes in combination with material artifacts (e.g., Ravasi et al., 2019), as a sensemaking and sense-giving device that may be particularly useful during times of change to provide a needed sense of continuity (e.g., Sasaki, Kotlar, Ravasi, & Vaara, 2020). Studies in this vein have also interestingly shown how organizations can tap into broader, collective

social memory assets through the creative use of history. For example, Foster et al. (2011) showed how the fast food restaurant chain Tim Horton's build a dominant strategic position by associating itself with Canadian history through the construction of historical narratives that linked the firm to Canada's national sport, ice hockey, and the Canadian military. Similar dynamics were described in the case of Scania which managed to prevent a hostile takeover (Brunninge, 2009) and Jack Daniel's that used broader social memory to reconstruct its identity (Holt, 2006).

We would expect that TADs could be used in a broadly similar way and for similar purposes. However, we would also expect that the use of TADs may be inherently more unstable in that organizations can more easily vary their application across time and contexts. This thus provides a unique opportunity to observe rhetorical history dynamics within and across cases.

TADs and organizational values. As, based on previous research, we would expect that TADs are typically used as strategic symbols to evoke specific values related to history, it would be important to consider the broader literature on organizational values as well. One key insight from this literature is that symbols provide a particularly comprehensible, parsimonious and accessible manner to shape audience perceptions of organizational values (Dandridge et al., 1980; Schein, 1992; Vaughn, 1995). Another important insight is that symbols can be strategically ambiguous, which allows for some difference in interpretation while still promoting commonality in value perceptions (Eisenberg, 1984).

Based on this we could see TADs as potentially effective symbols for evoking time-related values that are universally desirable, such as accomplishment, competence, expertise, reliability and trustworthiness (Hudson & Balmer, 2013; Suddaby et al., 2010). In addition, TADs may also evoke more particularistic values related to the temporal origins of the organization that may involve tradition, conservation, authenticity, and historical reverence (Beverland, 2005, 2006; Pecot et al., 2018). However, compared to other values, the values evoked by TADs may be more difficult to control by TAD users as time references, in contrast with other symbols such as new logos, are likely to have pre-existing meanings for audiences. As such, the use of TADs may also risk association with a class of less desirable values that happen to be tied up with particular time periods.

TADs and organizational identity. A third related stream of research that may offer useful insights for our exploration of the use of TADs, is that on organizational identity. In the organizational identity literature there is a stream of research focusing on the use of history (e.g., Anteby & Molnar, 2012; Foster et al., 2017; Hatch & Schultz, 2002, 2017;

Kroezen & Heugens, 2012; Ravasi & Schultz, 2006; Suddaby et al., 2016; Zundel et al., 2016). These studies converge on the argument that history is an important foundation of an organization's identity. The founding of an organization can have a lasting effect on the identity (Basque & Langley, 2018) and an organization's history contributes to a reservoir on which the organization can draw to formulate its identity (Kroezen & Heugens, 2012). History can contribute to an organization's distinctiveness as it is difficult for others to copy, whether the history is organization specific (Barney, 1991; Hatch & Schultz, 2002; Ravasi & Schultz, 2006), or community wide (Foster et al., 2011). History can also be important in the creation of organizational identity when particular historical periods are better forgotten (Anteby & Molnar, 2012) because they are contested, for example (e.g., Booth et al., 2007; Muhr & Salem, 2013). TADs can contribute to the communication of organizational identity as they articulate specific dates in the organization's history to direct attention to, for instance its founding, which can be a central, enduring, and distinctive characteristic of the organization.

In summary, the related literatures on organizational history, organizational values, and organizational identity have provided valuable insights and allude to the possible usages and meanings of TADs. We add to these studies by also looking at *when* and *how* organizations use TADs and evoke their past to communicate aspects of their history, values, and identity. While to some extent history, values, and identity may be embedded in all forms of communication (e.g., in organization's logos, websites, product packaging), by studying the use of TADs over time we hope to generate a better understanding of when and how organizations evoke symbols to re-affirm (or re-create) their history, values, and/or identity.

METHODS

We study the use of TADs in three case studies of comparable chocolate producers: Halloren, Suchard, and Cadbury. The case study approach allowed us to study in detail the processes and temporal context under which organizations appear to use or discontinue the use of TADs, processes and contexts that are much harder to capture using different methods. We used multiple cases, because they allow for replication and extension of emergent theory (Eisenhardt, 1989, 1991).

We chose chocolate producers, because the chocolate industry is rich in tradition and chocolate producers often highlight their histories (Cassiday, 2012; Terrio, 2000, 2016). Therefore, we would expect chocolate producers to be relatively likely to use TADs. The selected organizations were comparable as they were all roughly founded in the same period

(first half of the 19th century), were all still in existence (though not necessarily as independent organizations) and had continued to produce chocolate, while also sharing similar founding conditions. For instance, the three organizations started as small grocery stores, founded by a single person. In addition, all three organizations were founded in broadly similar cultural regions. Lastly, the three organizations were somehow affected by World Wars I and II.

While our initial interest was to explore common forms of TADs and apparent purposes across these cases, as the study progressed, we began to observe interesting differences within and across the cases' TAD usage trajectories that also involved notable episodes of discontinuation or absence of TAD usage. This provided an important emerging topic in our analysis. We present an initial event history for each case in the next section, before considering patterns in TAD usage in our findings section.

Data Collection

We collected data from multiple sources. First, we used the organizations' own websites, specifically the 'about', 'our history', and/or 'our story' pages to create an initial timeline for the organizations. The company websites also served as a first source for the collection of artifacts. Second, we used books and papers published by, or about, the focal organizations to validate and complement the information gathered from the company websites. Third, we gathered a broad collection of artifacts through targeted search on other relevant websites: the online collections of chocolate wrapper collectors, artifacts offered for sale on eBay and similar platforms, the online collection of Musée d'art et d'histoire in Neuchâtel, Switzerland, and the global brand database of the World Intellectual Property Organization[9]. Fourth, we searched for advertisements and newspaper articles on the three cases by using dedicated online databases such as LexisNexis, Factiva, ZEFYS (a portal from the Berlin State Library that also documents historical newspapers from the former GDR), and the online archives of the university and library of Sachsen-Anhalt. The newspapers were not only used to collect additional artifacts that could potentially include TADs, but also to gather more information concerning the temporal context and the perspectives of relevant

[9]See for instance: http://www.chocolatewrappers.info/collection.htm
https://www.chocolatewrapper.de
https://www.mahn.ch/collections/detail/collection/chocolats-suchard-tobler-milka/
https://www.wipo.int/portal/en/index.html

audiences in relation to the three organizations and their use of TADs. Before describing our analysis of the collected artifacts, we first briefly describe the three chocolate producers.

Halloren. Halloren, was founded by Friedich August Miethe and called "Kakao- und Schokoladenfabrik Halle" (Cacao and Chocolate factory Halle) in Halle, Germany, allegedly in 1804. After the death of Friedrich August Miethe, Theodor Saalwächter, who had been an employee, took over the firm. In 1851 Theodor sold the firm to his employee, Friedrich David, who changed the name to "Friedrich David & Söhne" (Friedrich David and Sons). Under the leadership and ownership of the David family the company expanded substantially. In 1870, they opened Café David to create a new meeting point where they could sell their products. To keep up with demand they built a new factory, which was finished in 1896 and which is still home to Halloren's headquarters. In 1905, the firm went public for the first time, creating "David Söhne AG" (David Sons Inc.). However, the firm's fortune changed with rise of the National Socialists in Germany. Because of the name David, the family was wrongfully thought to be of Jewish origin, and consequently the firm was boycotted. As a result, in 1933 the company changed its name to "Mignon Schokoladenwerke AG" (Mignon Chocolates Inc.), after its top-selling product.

During World War II the company had to produce airplane parts for the German air force, however the production of chocolate was resumed after the end of the war. Not long after the War in 1950, since Halle is located in East Germany, the firm was expropriated and became state owned. Its name changed first, to "Kombinat Süßwaren" (Combined Sweets), and later to "VVB der Süß- und Dauerbackwarenindustrie", which stands for "Vereinigung der Volkseigen Betriebe der Süß- und Dauerbackwarenindustrie" (publicly owned operation of sweets and sustainable bakery products)[10]. The name changed again to "VEB Schokoladenfabrik Halloren" (publicly owned chocolate factory Halloren) in 1952. Halloren refers to the workers employed in salt mining and salt production, which was a common trade in the early history of Halle. Although the production of chocolate and sweets continued during the Soviet Regime, innovation was stalled. After the reunification of Germany, the company was bought, hence privatized, by Paul Morzynski in 1992, but the name "Halloren" was kept. It was up to him to invest in the needed changes to create a factory that was up-to-date and able to compete with chocolate producers in the west of Germany and other European countries. Today, Halloren claims to be Germany's oldest operating chocolate

[10]Similar to many organizations during the Soviet rule of East Germany, Halloren lost the status as 'independent' organization and became part of the public organizations of sweets and baked goods. Hence, the 'name' of the organization indicated the type of organization as well.

factory. The company is well known for its "Halloren Kugeln" (Halloren globes) – introduced in 1952, chocolate treats that resemble the buttons of the traditional salt workers' uniforms.

Suchard. Philippe Suchard opened a small confectionary shop and factory in Neuchâtel-Serrières, Switzerland, in 1825. As of 1826, he focused on and started to produce chocolate. His son, Philippe Suchard Junior who joined the firm in 1855, was meant to take over the company from his father in due time. Upon joining, father and son discovered advertising, and grew the business together (Edlin, 1992). Carl Ruß (later Ruß-Suchard) who joined the company as a travelling salesman in 1860, married one of Philippe Suchard's daughters, Eugenie in 1868. Philippe Suchard Junior died in 1883 and his father in 1884. The passing of Philippe Suchard Junior and senior left Carl Ruß-Suchard in charge. He continued to lead the organization for forty years. After Carl Ruß-Suchard passed away in 1925, his youngest son, Willy Ruß took over as the director of the organization. The organization opened its first factory overseas in Lititz, Pennsylvania (U.S.) in 1928. In the same year, a factory was opened in Strasbourg. With different factories and sales offices in several countries, the management decided to change its structure and in 1937 the "Holding Suchard S.A." was established. With the new structure, the several overseas divisions gained more responsibility and control, but the headquarters were kept in Switzerland. The new structure proved successful, with further expansions to Canada and South-Africa in 1947 and 1948, respectively. However, Suchard also faced a shortage of raw materials during World War II and a decrease in sales and misfortune after the end of the war. In 1953 a new factory was opened in Switzerland, with access to the train rails to improve the efficiency and speed of the supply of resources. This factory burned down in 1957, to only be opened again in 1960.

In 1970, Suchard merged with Tobler Company, establishing 'Interfoods'. The Tobler Company was founded as a confectionery shop by Jean Tobler, in Bern, Switzerland, in 1868. Tobler's son and his nephew invented the famous chocolate bar 'Toblerone'. Interfoods and Jacobs AG merged, changing the name to 'Jacobs Suchard AG' in 1982. Jacobs AG was founded by Johann Jacobs, in Germany, in 1895. Jacobs' started his business by selling tea, coffee, biscuits, and chocolate. In 1895, he opened a small coffee shop and until this day Jacobs is widely known as a coffee brand. Jacobs Suchard AG was acquired by Kraft foods in 1990. Kraft foods spun off its snack food division – including Suchard and Cadbury - in 2012, renaming this branch 'Mondelēz International'. The flagship product of Suchard is 'Milka' which was introduced in 1901.

Cadbury. John Cadbury opened a grocery store in Birmingham in 1824. Among other items he sold cocoa and drinking chocolate. When John Cadbury bought a warehouse in 1831, he started to produce cocoa and drinking chocolate on a commercial scale. He further expanded the line of drinking chocolates, and by 1841 he was selling 16 different varieties. Soon the facilities were too small to sustain the production of the increasing popular products, and in 1847 the organization moved to a larger factory. However, during the following years many chocolate companies closed, due to decreased demands and difficulties in acquiring affordable raw materials, and Cadbury was experiencing a downturn as well. When, in 1861 the company was passed on to his sons, Richard and George Cadbury, the brothers were worried about a potential bankruptcy. As a response they both decided to invest heavily in the organization to innovate the production process and deliver a higher quality product. This resulted in the introduction of the first unaltered cocoa in 1866. The company's sales increased and the brothers expanded it by building a new factory, named Bournville, south of Birmingham, in 1879.

The years after World War I were prosperous for Cadbury. However, with the beginning of World War II Cadbury, like other organizations, was experiencing severe shortages of raw materials. Furthermore, during the second half of World War II the organization had to produce airplane parts for the British air force. After the end of the war the production of chocolate was resumed, but it was not until the early 1950s that the government lifted the restrictions on raw materials and the production could be scaled up. Cadbury merged with Schweppes in 1969, leading to the establishment of "Cadbury Schweppes". Cadbury Schweppes bought "Adams" (a chewing gum manufacturer) in 2003 and became the world's leading confectionary company. Cadbury and Schweppes de-merged in 2008. The Cadbury family has had (partial) ownership and led the organization, for four generations, throughout the organization's life course (even after the merger with Schweppes) until a hostile takeover by Kraft foods in 2010. The take-over led to the Cadbury family disassociating from the brand, by resigning from their executive positions. Well-known Cadbury products are Cadbury Eggs and Cadbury Dairy Milk Chocolate. Many of Cadbury's products packaging and advertising have a distinctive purple color. Cadbury patented this color - 'Cadbury purple'[11].

[11]See for instance: https://www.designweek.co.uk/issues/may-2012/cadbury-wins-exclusive-use-of-pantone-2685c-purple/

Data Analysis

In our analysis we first turned to each case individually, allowing patterns to emerge from each case before trying to compare across cases (Eisenhardt, 1989). The first step in our analysis was the construction of a timeline for each organization, detailing the history of the organizations. This timeline was informed by the company's websites and later supplemented with information from books about the organization, newspaper articles and prior studies on the organization (e.g., Bailey & Bryson, 2015; Rossfeld, 2008; Rowlinson & Hassard, 1993). The second step was to code the artifact data for each organization, including the artifacts found on platforms such as Ebay and online museum archives, and in books and newspapers. We coded each artifact for four descriptive characteristics: its type (e.g. advertisement, logo, packaging, letter, invoice, company publication, postcard or merchandise), its year of origin, its country of origin, and the language used (where applicable). We subsequently coded, for each artifact, whether a TAD was present and if so, which year or time period was referred to, and what descriptor was used, if any. We also coded whether the name of the organization was present and given that there are occurrences of name changes, what name was used. In cases where we could not accurately determine the year of origin, we relied on other cues, such as the organization's name, to determine the period in which the artifact must have been produced.

The third step was to identify episodes of TAD usage that were marked by changes in whether and how TADs were used. We then specifically focused on periods of change and searched for additional information on the organizational and environmental conditions under which the change occurred. As a fourth and final step, we compared the cases and focused on similarities and differences across the organizations.

Tables 1 – 3 summarize the organizations' timelines, the number of artifacts found for a certain time period, and the use of TADs for these artifacts. We present these in combination with organizational events, actions, and changes per year drawn from our company event histories. We counted an artifact once for each year it occurred. For instance, a newspaper advertisement that re-occurred every week in a given year, was only counted once for that year (instead of 52 times). We opted to present the number of artifacts at 10-year intervals for sake of comprehensibility and reliability. It was often impossible to determine the exact year of origin of some artifacts. However, based on style (e.g., logo used) and artifact description that was often available in the data source, we could in many cases determine with near certainty in which decade the artifact must have been produced. Nevertheless, especially for more recent years it proved impossible to assign many of the

artifacts to a certain time period because advertising, logos, and product packaging appear to have been more stable across years and even decades – hence it was more challenging to infer years of origin. Although this might seem counterintuitive, over time, all three organizations showed more stability in their visual communication. For instance, we found fewer changes in name, logo, or colors used. Therefore, we opted to have a twenty-year period from 2000-2019 for Suchard, and for Halloren we have a twenty-year period from 1990-2009.

In spite of these efforts, we still had to exclude some artifacts from our analysis because we could not reliably assign them to a time period. In the case of Cadbury, we encountered 122 such artifacts and in the case of Suchard 77, while we were able to assign all Halloren artifacts reliably to a specific time period. Most of these excluded artifacts appeared to be 'vintage' but since a description of the original source was missing we could not determine whether these artifacts were originals, (re)productions created in more modern times, or copies made in modern times by enthusiastic fans and collectors. For a detailed overview of the included artifacts we refer to appendix A.

Year	Event/Action	Period	No. Artifacts	No. TADs
1774	Halloren possibly founded, according to Johannes David (son of Friedrich David)			
1803	Friedrich August Miethe founded Kakao- und Schokoladenfabrik Halle	1803-1809 1810-1819	5 1	**0** **0**
1827	† F.A. Miethe	1820-1829	51	**0**
1832	Th. Saalwächter takes over the firm	1830-1839	33	**7**
1845	† Th. Saalwächter	1840-1849	9	**0**
1851	Friedrich David, an employee of the firm, took over the company, changing the name to Friedrich David & Söhne	1850-1859 1860-1869	4 0	**2** **0**
1870	Opening café David	1870-1879	7	**0**
1876	Start production of chocolate			
1877	First permanent newspaper advertisement			
1879	Sons Ernst & Johannes take-over the firm, except for the café which is taken over by son Paul			
1882	Ernst David becomes sole owner of the firm	1880-1889	7	**2**
1890	Mignon is first introduced to the market			
1894	First ad for Mignon in local newspaper	1890-1899	28	**6**
1896	Opening bigger factory			
1896	† Friedrich David			
1904	Centennial	1900-1909	18	**6**
1905	Company goes public			
1906	† Ernst David, two long term employees take over leadership of the organization: Paul Sipp and August Franke			
		1910-1919	12	**5**
1922	Factory strike	1920-1929	22	**7**
1928	Call for boycott of the firm because they fired 46 people			
1929	125-year anniversary celebration			
1933	Name change to Mignon Schokoladenwerke AG	1930-1939	37	**6**
1933	Founding of Lothario Schokoladen- und Kakaogesellschaft m.b.H.			
1936	† Anna David			
1943	The factory is shut down and last raw materials are being confiscated. Start of production of airplane parts under the name Siebel-Flugzeugwerke	1940-1949	10	**1**
1945	Factory re-starts the production of food products			
1950	Company becomes state-owned, the name changes first to Kombinät Süßwaren and later to VVB der Süß- und Dauerbackwarenindustrie	1950-1959	27	**0**
1952	Name change to VEB Schokoladenfabrik Halloren	1960-1969	14	**0**
1952	Introduction of Halloren Kugeln			
		1970-1979	4	**0**
		1980-1989	8	**0**
1990	After the reunification of Germany the organization is privatized by the Treuhand	1990-2009	33	**29**
1992	Paul Morzynski becomes the new owner, name change to Halloren			
2000	Acquisition of Confiserie Dreher			
2001	Opening chocolate museum			
2003	Acquisition of Chocolaterie and Confiserie Weibler			
2004	Celebration of bi-centennial			
2006	Second time company goes public			
2008	Acquisition Delitzscher Schokoladenfabrik			
2011	Acquisition of the Dutch firm Steenland Chocolate	2010-2019	10	**10**
2012	Acquisition of part of the Belgian firm Bouchard Deskalides			
2017	Opening new chocolate room in chocolate museum			
		Total	340	**81**

Table 1. Halloren.

Year	Event/Action	Period	No. Artifacts	No. TADs
1825	Philippe Suchard opens confectionery shop, Neuchâtel-Serrières	1825-1829	2	0
1826	Philippe Suchard opens chocolate factory, Neuchâtel-Serrières			
		1830-1839	9	0
1855	Philippe Suchard Junior joins firm	1840-1849	8	0
1860	Carl Ruß joins firm as first travelling salesman	1850-1859	0	0
		1860-1869	4	1
		1870-1879	5	2
1880	Opening first plant outside Switzerland in Lörrach, Germany.	1880-1889	17	0
1883	† Philippe Suchard Junior			
1884	Carl Russ-Suchard (son-in-law) takes over † Philippe Suchard			
1888	Opening factory in Bludenz, Austria			
1893	Suchard becomes the first organization to register its trademark in the international trademark register of WIPO	1890-1899	24	4
1901	Introduction Milka	1900-1909	98	8
1903	Opening two factories in France			
1905	Legal form changed from a limited partnership to a public limited company			
1909	Opening factory Spain			
		1910-1919	204	5
1923	Opening factory in Italy	1920-1929	27	8
1925	† Carl Ruß-Suchard Willy Ruß takes over			
1926	Celebration centennial			
1928	Opening factory in U.S.			
1929	Opening factory in Belgium			
1931	Company starts to focus on sugar confectionery due to the shortage in raw materials for chocolate	1930-1939	45	3
1937	Establishment “Holding Suchard SA”	1940-1949	3	2
1947	Opening factory in Canada			
1948	Opening factory in South-Africa			
		1950-1959	18	5
1953	Opening new factory in Switzerland			
1957	Fire that burned down the new factory in Switzerland			
		1960-1969	11	0
1970	Merger with Toblerone, name changes to Interfoods	1970-1979	6	0
1982	Merger with Jacobs AG, establishing Jacobs Suchard AG	1980-1989	10	0
1986	Acquisition of E.J. Brach (US candy company)			
1987	Acquisition Belgian company Côte d’Or			
1990	Kraft Foods acquires Jacobs Suchard AG	1990-1999	6	1
2012	Spin-off of snack division establishing Mondelēz International	2000-2019	18	11
		Total	515	50

Table 2. Suchard.

Year	Event/Action	Ten-year interval	No. Artifacts	No. TADs
1824	John Cadbury opened grocery shop, Birmingham	1820-1829	1	0
1831	John Cadbury opens factory, Birmingham	1830-1839	0	0
1842	Expansion of chocolate products for sale	1840-1849	1	0
1847	John's brother Benjamin joins firm, name changes to Cadbury brothers Move to a larger factory, Birmingham			
		1850-1859	2	0
1861	Richard and George, John's sons takeover the firm and John	1860-1869	6	0
1866	retires	1870-1879	5	1
	Introduction new processing technique			
1875	First Easter Egg			
1879	Bournville factory is opened	1880-1889	4	0
1897	Cadbury milk chocolate is launched	1890-1899	16	1
1905	Cadbury dairy milk is launched	1900-1909	32	1
1919	First official logo commissioned Acquisition of J.S. Fry & Sons	1910-1919	12	0
1920	Cadbury Dairy Milk gets the distinctive purple color	1920-1929	21	0
1921	Cadbury script logo introduced			
1928	Introduction of the 'glass and a half' symbol			
1931	Celebration of centennial	1930-1939	80	2
1935	Founding of the Cadbury Foundation			
1937	George's son Edward takes over			
1939	Beginning WW2 leading to a shortage of raw materials			
1944	Laurence Cadbury succeeded his brother Edward as head of the company	1940-1949	21	1
		1950-1959	103	0
1965	Adrian, Laurence's son takes over	1960-1969	90	0
1969	Merger with Schweppes establishing Cadbury Schweppes			
		1970-1979	88	0
		1980-1989	140	2
		1990-1999	158	1
2006	Company goes public	2000-2009	234	1
1990	Cadbury World opens			
	Dominic succeeded his brother Adrian			
1996	John Sunderland takes over chairmanship of the company from Dominic Cadbury			
2003	Acquisition of Adams			
2008	Cadbury and Schweppes demerge			
2010	Take-over by Kraft Foods	2010-2019	109	3
2012	Spin-off of snack division establishing Mondelēz International			
2015	80th Anniversary of the Cadbury Foundation			
	25th Anniversary of Cadbury World			
		Total	1123	13

Table 3. Cadbury.

FINDINGS

Our data revealed several patterns in the use of TADs by the three organizations. First, we present our findings for each case. Second, we will compare the findings of the three cases and identify the contexts that led to the use or the discontinuation of the use of TADs, their

different forms, and theorize about the potential purposes of TADs, that can be further developed and tested in future research.

Halloren

From the artifacts of Halloren, a clear pattern emerged in the episodes of TAD usage. The first instance in which we observe a reference to the past by – what we know now as – Halloren, is in 1832. It is in this year that the family of the founder, Friedrich Miethe, sold the organization to an employee, Theodore Saalwächter. In several newspaper announcements, the new owner Theodore Saalwächter signs with "früher Hrn. Miethe" ("before Mr. Miethe") or "Firma Miethe" ("firm Miethe") when he advertises his organization that goes by his own name. The accompanying text in these advertisements and an earlier newspaper announcement of both the former owner and the new owner, indicate that these TADs were intended to reassure audiences of the continuity of the organization. Theodore Saalwächter uses the reference to the previous firm name and owner often in his first year as the business owner. Subsequently it is more sporadic, with the reference appearing on advertisements in 1833, 1836, and for the last time in 1837.

The second instance of Halloren using TADs was when Friedrich David, an employee of Theodore Saalwächter, took over the organization in 1851. He used a similar practice to refer to the previous owner, signing newspaper announcements with "früher Theodore Saalwächter". Again, the accompanying text is a promise to the public to deliver the same quality as they have been accustomed to and ensure them of the continuity of the organization. Friedrich David repeats the practice in 1855 once more, after which there is no evidence of references to the prior owner.

In 1882, we observe the first reference to the founding year of the organization. At this time, newspaper announcements that were mainly text up to that point, had changed, taking on more the appearance of contemporary advertisements. The TAD used is 'gegründet 1803', which translates to 'founded 1803', soon after this for unknown reasons, the year referred to changes to 1804. The reference to the (alleged) founding year stresses the history of the organization and seems to be a claim to legitimacy. At the time of its first use, the organization was almost eighty years old already – with a proven track record of its success. One of its main successes in its recent years was the opening of Café David in 1870, which was a popular establishment for residents of Halle. It is also during this period that references are made to awards received at several fairs and exhibitions for the outstanding quality of the chocolate, a common practice at the time (Bradley, 2011), and reinforcing the communication

of the organization's superiority. It was also during this time that the sons of Friedrich David had taken-over control and ownership of the firm, an important and considerable internal change.

Although Halloren seems to use TADs continuously between the 1880s and 1933 (see figure 1 for an example), they notably appeared to have let their centennial pass without much attention. However, they did issue a press release in 1929, which was published in several local newspaper to celebrate the organization's 125th anniversary. The press release focused mostly on the improvements made by Friedrich David and his family, that contributed to growing the business. This narrative highlighted the more recent history, instead of the earlier owners Friedrich Miethe and Theodore Saalwächter. The press release framed the organization to be a family owned business, operating according to the values and foresight of Friedrich David. In that sense, the TAD used, and the accompanying narrative, focused on the organization's current characteristics and values, much more than its long history.


Chocoladen-Fabrik
von Fr. David Söhne. Halle a/S.
Geiststraße 1, Markt 19.
Gegründet 1804.
Vanille-Chocoladen.
Nr. 0. Extrafeine Caracas-Chocolade pr. 1/2 Ko. Preis Mark 3,25.
" 1. do. do. do. do. " " 2,50.
" 2. Feinste Caracas-Chocolade do. " " 2,00.
" 3. do. Vanille- do. do. " " 1,60.
" 4. Feine do. do. do. " " 1,25.
" 5. Vanille-Bruch-Chocolade do. " " 1,00.
Entöltes Cacao-Pulver.
In Dosen leicht pr. 1/2 Ko. Preis Mark 3,30.
do. löslich, 1/4 " " " 1,75.
do. 1/8 " " " 0,90.
In Papier, garantirt rein, pr. 1/2 " 2,20.
Cacao in Tafeln.
Nr. 1. Feinster Caracas-Cacao pr. 1/2 Ko. Preis Mark 3,00.
" 2. do. Cacao " " " 2,00.
Gesundheits-Cacao nach Vorschrift des Herrn Dr. Kuntze-Halle, halb entölt, pr. 1/2 Ko. 2,50.
Feinste Gesundheits-Chocolade, ohne jedes Gewürz, pr. 1/2 Ko. 1,25.
fl. Eisen-Chocolade nach Vorschrift des Herrn Sanitätsrath Meyer-Halle a. S., pr. 1/2 Ko. 2,00.

Figure 1. Advertisement of Halloren, ca. 1890 (Bock & Beljan, 2020, p. 25).

The use of TADs was abandoned around 1933, the same year the organization changed its name to 'Mignon Schokoladenwerken'. Mignon was the company's flagship product at the time. This name change followed a boycott of Jewish businesses initiated by the Nazi regime. The David family was not of Jewish origin however. Yet, because of their name they were assumed to be Jewish and consequently boycotted. Although, in the period immediately after the name change, TADs were used occasionally – some included on stationary with the new name, and some on old stationary that was being used during that time – the practice appeared to have been abolished not much later. All references to the past, and the owning family, were removed to avoid negative attention and potential negative economic consequences. Interestingly, this was only a few years after the press release that highlighted the family values embedded in the organization. The removal of references to the past highlights how what was valued in the past can become an organizational liability in the present and future. After the end of the war, the organization reintroduced the use of references to the establishment of the company in 1804 but kept the name Mignon. After the war, the sentiment in Germany had changed as had its government. Halloren produced airline parts during the war, re-instating the reference to its founding and past might have also been

to distance the organization from its war practices, although the use of TADs after the war was short lived.

In 1950, the organization was expropriated and became state-owned. The name changed once more and for nearly forty years during the GDR regime we did not observe any TADs. The absence of TADs might be caused because TADs are often organization specific. Under the GDR, however, all organizations became state-owned and multiple organizations were combined into associations, making TAD use less likely. It was during the Soviet rule that the organization was renamed Halloren, a name that has survived ever since. At the same time, the figure of a mineworker was introduced in the organization's communication and on its products. Both the name and figure refer to the salt miners, a traditional occupation of the region.

TADs returned after Paul Morzynski bought the organization in 1992. He kept the name 'Halloren' and the figure of a mineworker and added the TAD 'seit 1804' (since 1804) and the phrase "Deutschlands älteste Schokoladenfabrik" ("Germany's oldest chocolate factory"), see figure 2. Ever since, TADs have been used on stationary, in the logo, and on product packaging. By keeping the name Halloren and the mineworker, the organization related to former East-Germany and its residents. Halloren is still a popular product among residents of East-Germany, because of the nostalgia they experience and memories they are reminded of by the firm's products (Ahmed, Hinck, & Felix, 2018). The TADs would resonate with those audiences craving stability and continuity following the re-unification, which was a considerable change and led to uncertainty. In addition, the TADs would signal to audiences that had previously been largely unaware of the organization, for example those living in West-Germany, that the organization had a longer pedigree than other German chocolate producers that extended well beyond the GDR-period.

In 2004, the organization celebrated its bicentennial. Several merchandise artifacts, like toy trucks and wall plates were released that included the phrase "200 Jahre Halloren" ("200 years Halloren"). Special anniversary products or editions of products were released and many activities were organized, both for employees and external audiences. The newspaper articles and press releases covering the anniversary focused on the recent successes and the plans for the future, such as increasing export. In the same year, the chocolate room was opened in the Halloren museum that itself had opened two years prior. The bicentennial appeared to focus most on re-enforcing the group boundaries among employees and rewarding them, and their families, for their work. For external audiences, the

bicentennial seemed more targeted on the future and success of the company and provided an occasion to promote the organization.

Figure 2. Halloren's logo introduced 1992.

Suchard

Figure 3. Logo Suchard (2006-present).

Suchard used TADs continuously throughout its lifespan, referencing 1826, on letterheads, invoices, and product packaging. Noteworthy is the reference to 1826, instead of 1825 – the year in which the grocery shop was opened (see for instance the logo in figure 3). The text '*chocolatier depuis*', which translates to 'chocolate maker since', appears alongside the year and explains the choice of year. It was a year after establishing the organization (grocery shop), that Philippe Suchard started producing chocolate. Furthermore, 1826 was also the year that Philippe Suchard invented the *mélangeur*, a mixing machine that transmuted the process of mixing cacao and sugar and improved the quality and taste of the final products (Edlin, 1992). An innovation that did not go unnoticed by other organizations, such as Cadbury (Bradley, 2011; Squicciarini & Swinnen, 2016).

Suchard's use of TADs is more common beyond the Swiss borders, in for instance Belgium and France. However, we found the use of TADs on Swiss invoices and letterheads from 1892 to 1906 as well. This use of TADs appeared after the passing of the founder, Philippe Suchard, in 1884 leaving his son-in-law Carl Russ-Suchard in charge. For the six years in between his passing and our first observance of TADs, the communication of the organization seemed to continue as it had been when Philippe Suchard was still leading the firm. However, in 1892 Carl Russ-Suchard started to include his name in the organization's name, i.e. 'Russ-Suchard & Cie', and on its stationary. At this time, the organization was also the largest chocolate producer of Switzerland, employing over 200 people (Squicciarini &

Swinnen, 2016). The TAD used was ‘maison fondée en 1826’, which translates to ‘house founded in 1826’, hence an inaccurate year was used as the organization was actually founded a year earlier. The luxurious stationery of the invoices and letters, and the claim ‘maison fondée’ allude to the desire of the organization to present itself as a high-end and prestigious producer of chocolate. The TAD not only evoked the long history of the organization, but consequently its authority and legitimacy in the field.

Although TADs were dropped from Swiss letterheads after 1906, they continued to be used on letterheads in Belgium and France (see figures 4 and 5 for examples). Both countries have long traditions of artisanal produced chocolate (Cassiday, 2012; Terrio, 2000, 2016), similar to Switzerland. The use of TADs related to the organization’s history and experience in making chocolate. This might have been useful, as the French and Belgian audiences were not familiar with the organization and could have mistaken it to be a novice chocolate producer, instead of an established foreign producer that was only new to the local market.

Furthermore, we observe the use of TADs in Suchard’s centennial celebration in 1926. For this occasion, special posters were made (see figure 5). These posters were produced in both German and French and stress the organization’s experience in making chocolate. Again, this seems to be a claim to authority. We have not observed the use of TADs on the artifacts from 1960-1990. In this period, Suchard merged first with Toblerone (1970), and later with Jacobs (1982), possibly explaining the absence of TADs. As TADs often refer to the year of establishment, as was the case for Suchard, when two firms merge determining the date of establishment may become ambiguous. To avoid internal discussion, a simple solution would be to not explicitly state a date. TADs were re-introduced after Suchard was acquired by Kraft Foods, in 1993 (see figure 3) and have been in use since. Likely, Kraft Foods used Suchard’s TAD to signal the organization’s past and experience in chocolate making, and evoke its long history. Furthermore, the use of TADs after the acquisition by Kraft Foods might have served marketing purposes and differentiated Suchard from other chocolate brands already in the brand portfolio.


FONDÉE EN 1826

ADRESSE TÉLÉGRAPHIQUE :
SUCHARD-SAVENTHEM
TÉLÉPHONE :
BRUXELLES 15.37.45
COMPTE CHÈQUES POSTAUX N° 122797

SOCIÉTÉ BELGE
POUR LA FABRICATION DES
CHOCOLATS SUCHARD
Société Anonyme
SAVENTHEM

Chocolat Suchard

SAVENTHEM LEZ BRUXELLES. le 24 juillet 1934 .

Monsieur Ferdinant FOSSOUL .

Figure 4. Belgium letterhead (1934).

Figure 5. French letterhead.

Figure 6. Suchard's centennial poster.

Suchard also made references to the achievement of being awarded the "Grand Prix Paris 1900". We observe this claim for the first time on artifacts from 1900, but its use is continued until approximately 1910. This TAD is slightly different from other TADs we observed, as it does not refer to the organization's founding. We observed the claim on artifacts from Switzerland, Germany, Italy, the UK, and Belgium, but not on artifacts from France.

Cadbury

Cadbury made limited use of TADs. We found nine unique artifacts with TADs, relating to seven different time periods. The first is 'AD 1879' on the wall of the Bournville factory, which was built that year. The Bournville factory plays an important role in Cadbury's historical narrative (e.g., Bradley, 2011) – represented by many occurrences of the phrase "the factory in the garden" in advertisements and on other artifacts. It represents the Cadbury operating philosophy, grounded in the Quaker tradition, to treat employees equally and the organization's aspiration to be more than merely an employer. The housing and sport facilities, and several gardens, which Cadbury constructed on the factory's property, operationalize this philosophy. At the time of construction, the Bournville Factory was a state of the art production facility (Bradley, 2011). Although we have no documentation for why 'AD 1879' was included, it is related to the establishment of the factory, and less to the organization as a whole. That is, the TAD is likely to highlight the achievement of building an at the time very modern facility.

The second use of TADs is on an advertisement from 1900 (see figure 7). The advertisement makes references to a different generation with the phrase "our grandfathers drank it" and to the origins of the product with the sentence "the *oldest* and still the best absolutely pure cocoa" (italics added). During the late 1890s and early 1900s, the market for drinking cacao changed. Up to then, the strength and uniqueness of Cadbury was that it sold unaltered, pure cacao. This was important information for Cadbury's audiences, as before the 1870s many organizations altered their drinking chocolate, either because of resource scarcity, the price of raw resources, or simply to increase profit margins, with substances such as sago, sawdust, or even red oxide or iron (Bradley, 2011; Squicciarini & Swinnen, 2016). Hence, Cadbury built a reputation and created legitimacy for the organization by not altering its products. However, in 1872 the Food Adulteration Act was passed, prohibiting harmful moderation of chocolate products. Hence, 'purity' was not as unique as a selling point in 1900 as it once has been, since the overall quality of chocolate products was ensured by the Food Adulteration Act. Furthermore, other manufacturers, like the Dutch organization Van Houten, the UK competitors Rowntree and Fry, and the Swiss, Suchard, were improving their drinking cacao with alkalization, a legal modification that improved the taste and solubility of the drinking cacao (Bradley, 2011). Hence, in this particular instance the TAD used by Cadbury is likely an appeal on its established track record of delivering quality and value for money – two values the Cadbury board advanced (Bradley, 2011) – without being compelled by law, to attract audiences and warn off the increasing competition from other organizations in the market.

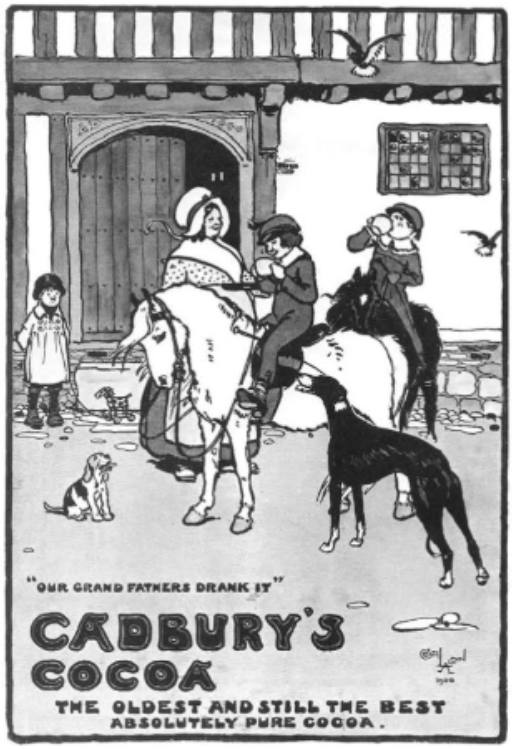

Figure 7. A Cadbury advertisement from 1900.

The third occurrence of TADs is the organization's centennial in 1931. According to a prior study on Cadbury, it is not clear why they decided to celebrate the centennial 7 years after the actual 100th anniversary of the organization, counting from the organization's founding year 1824 (Rowlinson & Hassard, 1993). Rowlinson and Hassard (1993) give as a possible explanation that Cadbury's centennial celebration followed as a reaction to a competitor's successful centennial celebration in 1928. Williams (1931), commissioned by Cadbury to write a book about the company's history, gave an alternative explanation for the centennial

celebration in 1931; 1831 was the year Cadbury started manufacturing cacao and producing chocolate. The latter is also supported by the organization's website and other publications (Bradley, 2011; Cadbury, 2010; Chinn, 2006). Thus, according to the narrative supported by the organization the festivities in 1931 were a celebration of 100 years of producing chocolate, the product that made the company famous. Although we cannot be certain about the exact reason for the late celebration of the organization's centennial, according to Rowlinson and Hassard (1993) the celebration itself was intended to create unity between Cadbury's past and present and to emphasize the founding values – those of the Quaker tradition - by which the organization was still operating.

The fourth, fifth, sixth, and seventh distinct TADs we found relate to Cadbury products. The first one is the mention of "1945 design" on a Dairy Milk chocolate bar wrapper, indicating that the design of the wrapper was renewed in 1945. Furthermore, it indicates that the production of Dairy Milk was resumed, after the end of World War II. Like other chocolate producers, Cadbury was struggling with the procurement of resources. Furthermore, at the national level the supply of cacao and milk was regulated. Even after the end of the war, the rationing and shortage of raw materials continued. In 1953 the market emerged from this forced state and full supplies to chocolate manufacturers were resumed (Bradley, 2011). Second, Cadbury celebrated the centennial of the chocolate covered biscuits in 1989. Third, Dairy Milk's centennial was celebrated in 2005. These product centennials seem to be used as a device to increase sales, by indicating the longevity and the associated popularity of the products. It is likely that, by association they also make inferences to the longevity and popularity of the organization. Fourth, on the Australian Cadbury range "Old Gold" we encountered the TAD 'Boldly original since 1916', referring to the year the first product in the range was introduced. Here, the TAD seems to reaffirm the range's name and the promise of tradition.

Lastly, we found that Cadbury registered a new logo for its premium range in 2011, with the small inscription "EST. 1824", referring to the actual year of establishment of the organization and not the year they started cocoa production. Here, the TAD signals the organization's long history and longevity. Although this logo can be found in the Global Brand Database, on the premium range products available for sale, a simpler and more stylized logo is used. However, the registered logo with the TAD seems to imply that 'premium' related to old age, possibly by evoking associations with heritage, history, and authenticity.

An overview of the use of the TADs by the three organizations is depicted in figures 8-10. The colored bars indicate the percentage of TADs including a TAD. In parentheses we included the total number of unique artifacts found for a particular decade. We also included icons to indicate what happened in a decade. We included changes in name and ownership, organizational expansion, death of owners, and anniversaries.

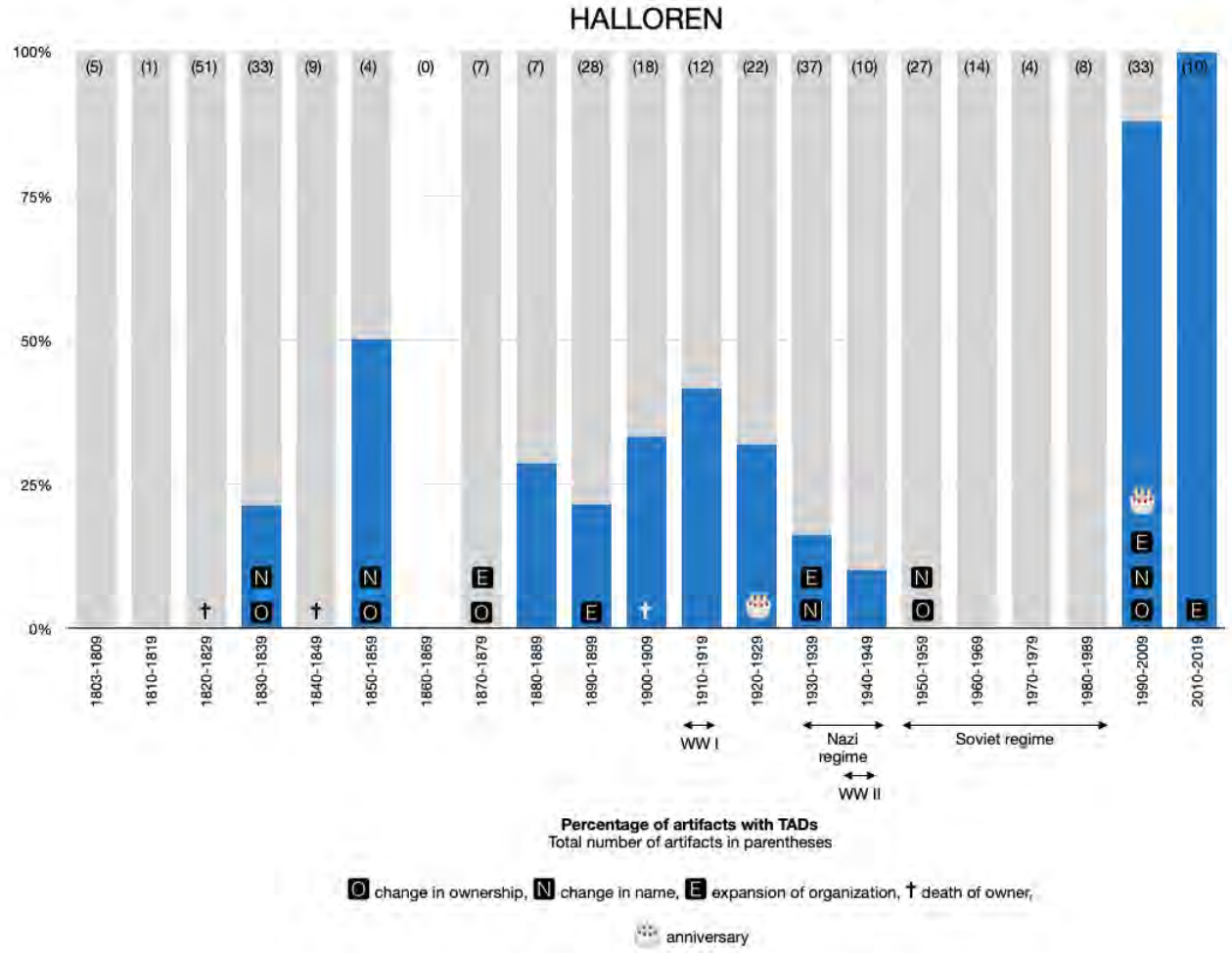

Figure 8. Halloren: The use of TADs.

The data revealed that the use of TADs and changes in the use of TADs co-occurred with organizational anniversaries and achievements, changes within the organization, and/or changes in the organizations' environment. In the next section we will elaborate on these patterns and give argumentation for these co-occurrences. In addition, we make a distinction between different forms of TADs and the purposes they may serve.

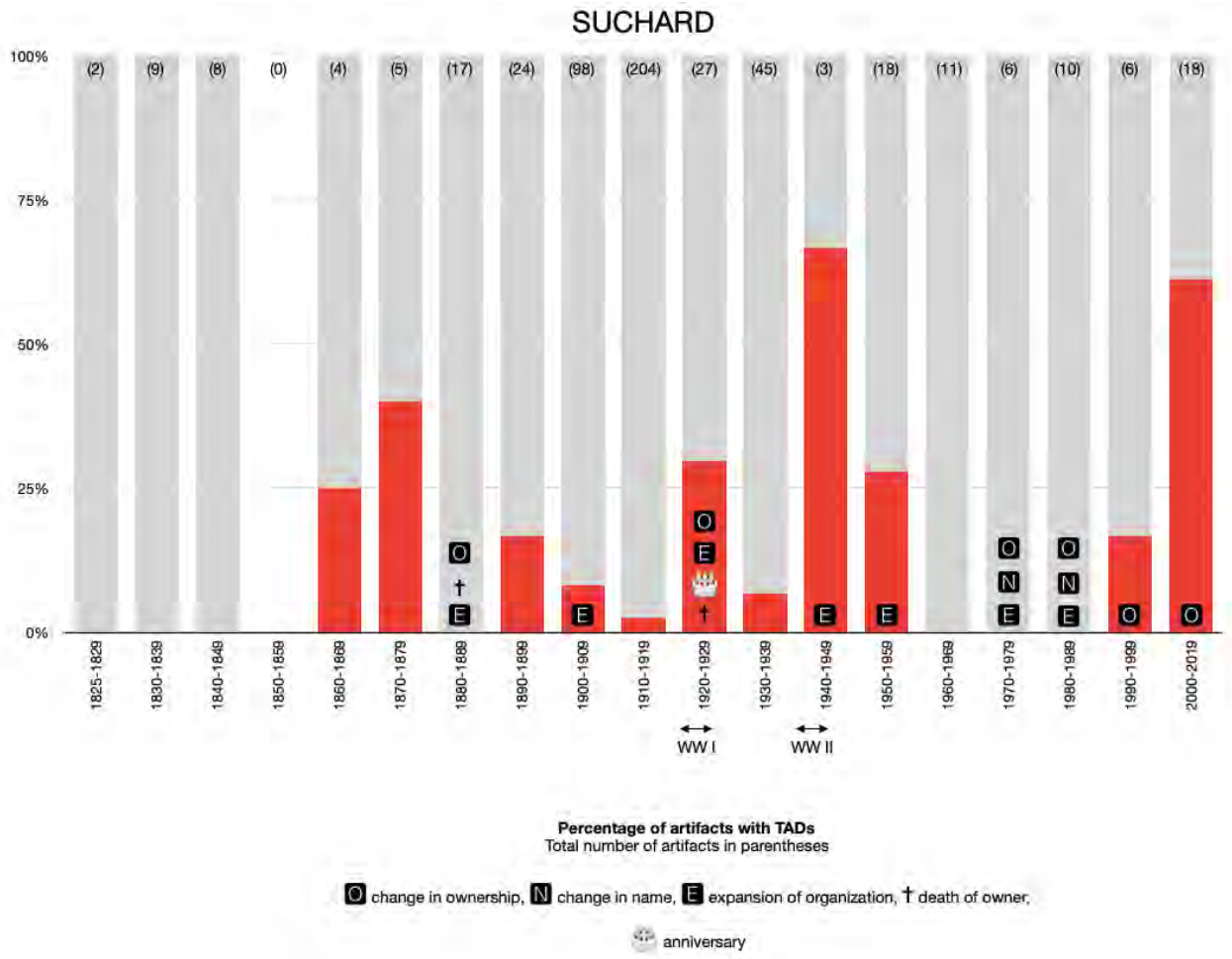

Figure 9. Suchard: The use of TADs.

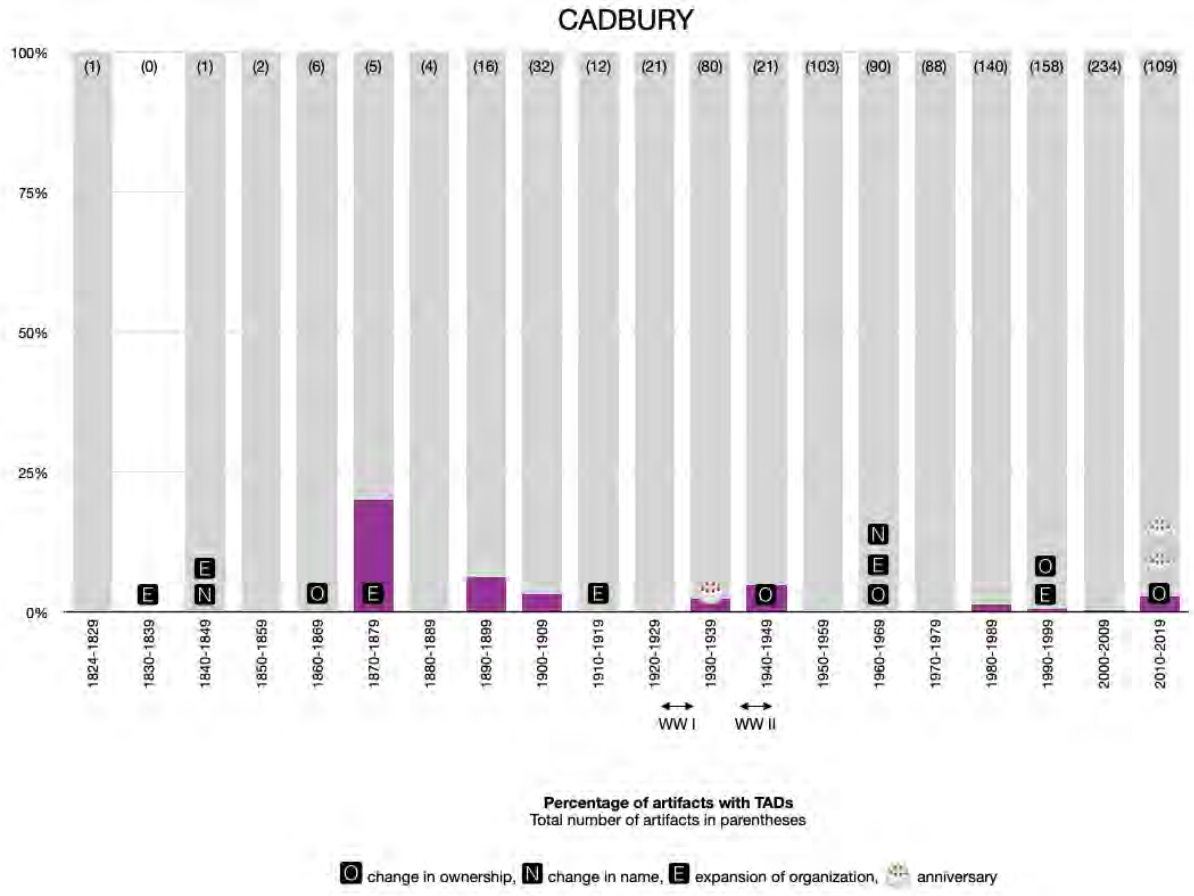

Figure 10. Cadbury: The use of TADs.

Patterns

From the artifacts collected, several patterns emerged regarding the use, discontinuation of the use, and absence of the use of TADs. We make the distinction between the use of TADs co-occurring or following on organizational changes and achievements and the use of TADs co-occurring or in response to environmental changes, circumstances, and events. From the patterns in the use and discontinuation of the use of TADs we were able to identity different forms of and purposes for TADs.

Discovery 1: TADs and organizational factors. For Halloren the first use of TADs is traced back to a change in ownership and leadership of the organization. An employee, Theodore Saalwächter, bought the organization from the founder in 1832. The second occurrence of the use of TADs in the case of Halloren also relates to a change in ownership and leadership; when Friedich David buys the firm from his boss, Theodore Saalwächter in 1851. Almost 150 years later, TADs reappear on artifacts of Halloren after the firm experiences yet another change in ownership and is privatized and subsequently bought by

Paul Morzynski. In the case of Suchard, the second occurrence of TADs coincides with the son-in-law of the founder taking over control and ownership of the organization, after the latter passed away in 1884.

From prior research we know that changes in ownership and leadership cause uncertainty for organizational members (e.g., Bruining, Boselie, Wright, & Bacon, 2005; Nelson, Cooper, & Jackson, 1995; Vakola, Armenakis, & Oreg, 2013). Furthermore, changes to the organization's core can be detrimental for organizational performance and survival as these changes reset the clock of the liability of newness (Amburgey, Kelly, & Barnett, 1993; Hannan & Freeman, 1984, 1989; Stinchcombe, 1965). Consequently, it is not surprising that new owners act to mitigate the uncertainty and detrimental effects of organizational change[12]. In the cases of Suchard and Halloren we found that the organizations are vocal and transparent about the change, with public announcements, and at the same time reinforce what is familiar to its audiences. The latter, is not done by extensive historical narratives, but rather by the use of a TAD that evokes what is familiar with phrases as "früher Hrn. Miethe", in the case of Halloren, or by reinforcing the continuation of the organization in the case of Suchard by emphasizing its founding in a distant past with a phrase such as "maison fondée en 1826".

TADs in these instances are what Durkheim (1912) refers to as 'collective representations', symbols that are properties of the group (Némedi, 1995; Olick, 2008), in our cases the internal members and the external audiences of the respective organization. The group's identity and their image of the organization might be reinforced by the new owner's use of TADs. These TADs echo the familiar (Meyer, 1984), emphasizing continuity, tradition, conservation, and authenticity. In this sense, the affected audiences might experience the change as less severe, since stability is reinforced and emphasized, and hence might help the organization's new owner to mitigate uncertainty and create a sense of stability and continuity.

Yet, that TADs are not necessary tools during periods of organizational change is highlighted in the case of Cadbury. Similar to Suchard, the organization was passed on to a younger generation over the years and none of these changes in ownership and/or leadership were accompanied by the use of TADs. Instead, Cadbury seemed to use a different approach to ensure continuity and stability in the wake of change. First, changes of ownership and/or

[12]By no means do we intend to imply that the mere use of TADs will suffice to mitigate uncertainty following a drastic organizational change. However, TADs can serve as supportive devices, by evoking history and continuity, among other actions and communication mitigating uncertainty.

leadership were less abrupt and followed a 'natural' course, as the Cadbury children were expected to take over at some point and were groomed for their future position from an early age onwards (Cadbury, 2010). Not only were the Cadbury family members familiar with this practice, so were internal members and external audiences. Second, Cadbury had a clear operating philosophy grounded in Quaker tradition that ensured that employee well-being was one of the organization's top priorities (Bradley, 2011). Third, although Cadbury had a number of organizational changes, what remained stable is the use of the name 'Cadbury', and the script logo introduced in 1921 - inspired by the autograph of William Cadbury, one of the grandsons of John Cadbury and head of the organization at the time. Furthermore, for a substantive period the reference to the once state-of-the art Bournville Factory was used and even until now the distinctive 'Cadbury-purple' is a key symbol of Cadbury.

The three organizations have in common the use of TADs to celebrate organizational anniversaries. In the case of Cadbury and Suchard we observed the celebration of their respective centennials, and in the case of Halloren we observed the celebration of its 125th anniversary and its bicentennial in 2004. The celebration of organizational anniversaries leverages an organization's history to serve present and future objectives (The History Factory, 2015) and constitutes an opportunity to retell history from the perspective of the present (Kitch, 2002), hence organizational anniversaries can serve to create intertemporal connections. Furthermore, organizational anniversaries reaffirm group membership and boundaries (Bytheway, 2009). Consequently, it is not surprising that these organizations initiated the celebration of their anniversaries. Noteworthy though, is that they chose to celebrate *old age*, none of the organizations we studied celebrated an age younger than 100 years. On the one hand, this indicates that they reaffirmed their superior achievement, competence, and expertise. These characteristics are generally accumulated over time and associated with old age. By association they show reliability and trustworthiness, increasing the legitimacy of the organization. On the other hand, we ought to place these findings in the appropriate temporal context; the three organizations date back to a time that time reckoning as we know today, was diffusing (Zerubavel, 1982, 1985), as was the practice of marketing (Bartels, 1988). Celebration of organizational anniversaries was not a common practice, unlike today where much younger organizations celebrate even five- or ten-year anniversaries.

Discovery 2: TADs and environmental factors. A second pattern that emerged from our data collection and analysis is the co-occurrence between the use of and discontinuation of the use of TADs, and changes in and of the environment in which the organizations are

active. However, considerable differences exist between the environments in which these three organizations operate. Cadbury operated in a relatively stable environment and when first expanding abroad it limited its focus to the British Commonwealth (Bradley, 2011). Suchard, on the other hand explored unfamiliar territory early on through travelling salesmen (Rossfeld, 2008). Halloren was focused on its home country and export activities were minimal. However, its home country Germany has undergone extreme changes with the Nazi regime, the Soviet rule, and the reunification of East and West Germany.

Suchard used TADs mainly in Belgium and France, two countries with a strong chocolate tradition of their own (Cassiday, 2012; Terrio, 2000, 2016). Suchard was a new player in these markets, even though it had a long record of experience in Switzerland, another country famous for the high quality of chocolate (Balastèr, 2015; Cidell & Alberts, 2006; Squicciarini & Swinnen, 2016). Geographic differences in chocolate are due to local taste, the origins of the raw materials, differences in production techniques and processes, and laws depicting how chocolate should be produced (Cidell & Alberts, 2006; Rinzler, 1977). Hence, by using TADs on its letterheads, invoices, and product packaging, Suchard was likely to appeal to the French and Belgium audiences taste for tradition and authenticity by signaling its own expertise and competence in the art of making chocolate in Switzerland. The use of TADs in these countries made the characteristics and values on which the organization wanted to be evaluated explicit to its new audiences. In that sense, a TAD might have served to foreground desirable characteristics and to communicate a long history. Consequently, it might have helped Suchard to gain a foothold and legitimacy in these markets.

Conversely, when expanding to the UK and Germany Suchard relied much less on the use of TADs or its proven history of success, and the focus was much more on the superior quality of the product and the higher value offered or the upper classes that enjoyed the product. See for instance an excerpt from an advertisement that ran in the UK around 1900:

> "*Chocolate Suchard owes [its superiority of flavor and aroma] not only to the choice of materials it is made of, but equally so perhaps, to the clean and careful methods by which it is uniformly prepared. The recognition of these sterling qualities has led to a largely increased consumption of Chocolate Suchard, all over the world, and to the Highest Awards everywhere."*

The TADs used in the UK and Germany by Suchard, emphasized achievements rather than the organization's longevity. For instance, its use of "Grand Prix Paris 1900" on artifacts, indicating winning a prestigious award at the 1900 Paris World Fair. These awards were considered a guarantee of supreme quality (Teughels & Scholliers, 2016).

The registered logo of Cadbury for the premium range, which includes the TAD "EST. 1824" referring to the establishment of the organization, is targeting audiences that value high quality (e.g., the French, Belgians, and premium range consumers). These TADs ground the organization in the past, communicating its history, and in that way evoke authenticity, competence, and expertise – foregrounding desirable characteristics. On the one hand, in new markets, with audiences that have developed preferences and tastes for these characteristics in chocolate producers, the use of TADs indicating the longevity of the organization might be very appealing. On the other hand, in markets where quality and value triumph over legacy and history (e.g., Germany and UK), TADs indicating the longevity of the organization are of little use, while focusing on the product's superior qualities likely appeals more to its audiences.

That the preferences of audiences might not be stable over time is highlighted in the case of Halloren, and their discontinuation of the use of TADs in 1933. Up to then, the use of TADs indicating the organization's founding date were proudly used, but with the change in regime, audiences' sentiment, and the economic downturn, the use of TADs was abolished. Eliminating TADs aided the organization to dissociate from Jewish origins. Furthermore, the discontinuation of TADs reflects the shift in societal focus towards the future (Hagen & Ostergren, 2006), and governing bodies attempts to redefine the past (Bytwerk, 1979; Ogle, 2015). These shifts are potentially highlighting that the past is not valued or that it is even contested. Although discontinuing the use of TADs does not erase an organization's history, it does remove visible reminders of its history. Consequently, audiences can imagine the organization in line with their modified preferences.

Halloren re-introduced the use of TADs for a short period after the end of World War II. Possibly, audiences' sentiment had changed, but furthermore the reinstatement of TADs referring to "1804" emphasizes the longevity of the organization, and might decrease associations with the war and the organization's activities, producing airplane parts, during the war. The supportive claims on artifacts from this period such as "*Mignon Schokolade Pralinen Überzugsmasse und Kakao sind Höchstleistungen"* – translated to "Mignon Chocolates Pralines Icing and Cacao are of high quality" (see figure 11), emphasized the organization's achievements similar to TADs during this period.

Figure 11. Halloren: Post war advertisement (Bock & Beljan, 2020, p. 47).

With the start of the Soviet rule in 1950, Halloren was expropriated, became state-owned and the use of TADs was discontinued. Their use resumed approximately forty years later, in 1992, after Paul Morzynski acquired Halloren from the Treuhand, the organization that was responsible for the privatization of East German companies after reunification. Although we highlighted this as the use of TADs following organizational changes in discovery 1, it also follows changes in the environment of the organization. Former East Germany audiences experienced vast environmental changes including a new political regime and a dramatically different economic system. TADs could signal to these audiences, that not all had changed, by reaffirming the continuation of the organization, with which these audiences were familiar. The TAD indicates that the organization was there long before the Soviet rule and that in combination with keeping the familiar name and the figure of a mine worker, it could alleviate audiences' anxiety and uncertainty regarding the changes. Furthermore, the reunification allowed Halloren to operate in West Germany. That also implied that the organization faced a novel audience, unfamiliar with the organization. Legitimation was augmented by using the TAD "seit 1804", again indicating that the organization is much older than East Germany and claiming the position of being Germany's oldest chocolate producer, with the claim "Deutschlands älteste Schokoladenfabrik" ("Germany's oldest chocolate factory"). This TAD provides an explicit and visible symbol that becomes a basis for evaluation for audiences. In this instance, TADs represent tradition, conservation, authenticity, and a strong ability to survive. The TAD emphasizes what is not changing, in a turbulent environment.

Forms and purposes. From our findings and the patterns in the data we observe five different forms of TADs and five primary, but not mutually exclusive, purposes. With forms of TAD we refer to how the TAD is used and to what it applies. We make the distinction between TADs relating to the organization as a whole, for instance evoking the founding year of the organization, TADs evoking key dates associated with buildings and facilities, TADs emphasizing anniversaries, TADs making dates of awards and achievements explicit, and TADs relating to products.

The first purpose of TADs we observed, is to serve the communication of history for instance when entering a new market or experiencing changes in the environment. TADs used for this purpose often refer to the organization's longevity and past (e.g., "founded in 1804"), its buildings and facilities (e.g., "AD 1879"), or anniversaries (for instance Halloren's bicentennial celebration). We observed that TADs that communicate organizational history are often evoked following internal and external changes. Prior research on organizational history and symbolism has focused on intended and purposeful organizational change (e.g., Gioia & Chittipeddi, 1991; Hatch & Schultz, 2017), in our study we noticed that TADs' use often follows changes in ownership and leadership, which can be purposeful and planned, but can also be experienced as unexpected and disturbing. The new owner or leader might make the planned and purposeful decision to take over the organization, but other organizational members do not have the same decision power. For these organizational members, the change may be unexpected, resulting in heightened uncertainty and the experience of disturbance. In our observed cases the new owner himself might also doubt the decision, taking on a huge risk, or the new owner is left without a choice, for instance after the passing of the previous owner and leader. This leads to our second purpose for TADs, creating a sense of stability and continuity during periods of organizational upheaval. Those newly in charge will act to mitigate the uncertainty and reassure their audiences. One way they seem to do so is by using TADs relating to the organization's past to announce the change happening and reaffirm the continuity of the organization. The TADs are both used for internal and external communication, reassuring various potential audiences.

Hence, the second purpose of TADs we observed was to create a sense of stability and continuity, following either/both internal and external organizational change. These TADs related to the organization, with claims referring to its past (e.g., "before Theodore Saalwächter"). Reaffirmation of the continuity and stability of the organization, we believe, is by association. Using TADs highlights the old age of the organization and by that its

longevity and ability to survive. This can be reaffirming as in the wake of change, people tend to search the past to mitigate uncertainty and look for existential anchors (Balmer, 2011; Weick, 1979, 1995). Furthermore, a focus on the past naturally emphasizes the continuity of entities in the present and continuing into the future (Lord, Dinh, & Hoffman, 2015). TADs seem to fulfill these social functions of reassuring organizational audiences and actors in times of unanticipated or radical organizational change.

In addition, we found that the use of TADs co-occurs and reflects changes in the environments of these organizations, for instance after expanding abroad in the case of Suchard or facing a new audience after the re-unification of Germany in the case of Halloren. These observations lead to the third purpose of TADs: foregrounding organizational characteristics often found desirable. These TADs refer to the organization, but also to awards and achievements, and anniversaries are often used to foreground an organization's desirable characteristics as well. The TADs align with the characteristics and values the organizations' audiences appreciate and adhere to. In the case of Suchard that meant using TADs in France and Belgium, to indicate its authority as a chocolate producer and create legitimacy for its expansion. Conversely, its communication in Germany and the UK focused on the quality and value of the product, as these were important for the audiences in these countries. Similarly, Halloren used TADs after the reunification of East and West Germany, explicitly signaling that it was the oldest chocolate producer of entire Germany. Consequently, Halloren might have attempted to reduce the association with East Germany, which was regarded as producing inferior products.

Furthermore, by using TADs these organizations are choosing to highlight a particular aspect of the organization, whether it refers to awards or the founding of the organization. These aspects become visible and explicit and serve as basis for audiences to evaluate the organizations. Making explicit certain aspects, e.g. its longevity, might result in audiences overlooking less favorable organizational aspects (e.g., inhuman sourcing of raw materials) and advancing a positive evaluation. Although it remains for future research to explore this finding further, organizations seem to use TADs to redirect audiences' attention to favorable periods, achievements, and characteristics. By that, less favorable periods and activities, e.g., production of airplane parts during World War II, might be removed from the experience of the organization's audience, or forgotten (Anteby & Molnar, 2012).

Reinforcing the internal group boundaries is a fourth purpose of TADs that is served by the celebration of anniversaries. In our findings we observed that although anniversaries are also targeting external audiences, particular focus is also directed towards employees and

their families. Anniversaries are used to reward and celebrate (former) employees, highlight past accomplishments and future aspirations. Often, we found anniversaries to set the stage to celebrate the plans for the future building on past success, rather than focusing on the past as is. Consequently these events create intertemporal connections between past, present, and future.

Fifth, we also observed in the three cases, TADs that seem to relate less to communicating history, to creating a sense of stability and to continuity, foregrounding desirable characteristics or reinforcing group membership. Instead, these TADs are related to products (e.g., Cadbury's "old gold" and Suchard's claim "l'original" on some products) and seem to serve marketing purposes. Indeed, the marketing literature highlighted the value of TADs referring to the past for consumers' evaluations (Pecot & De Barnier, 2017; Pecot et al., 2018) – our case studies corroborate that certain forms of TADs serve this purpose. In particular, TADs relating to products, but also those referring to anniversaries and the organization seem to be used to create a favorable perception and boost sales. However, the marketing purpose is only one of five purposes we observed in our cases. Future research may explore all five in greater depth and how different forms serve the various purposes. Table 4 summarizes the different purposes of TADs, the different forms, and some examples from our case studies.

Purposes/Forms	***Organization***	***Buildings & facilities***	***Anniversaries***	***Awards & achievements***	***Products***
Communicating history	"seit 1804/Deutschlands Älteste Schokoladenfabrik"	"AD 1879"	"1826 un siècle chocolat"		
Creating continuity & stability	"früher Hrn. Miethe" "maison fondée en 1826"				
Foregrounding characteristics	"Gegründet 1803"		"1831-1931 Century of Progress"	"Grand Prix Paris 1900"	
Reinforcing group membership			"1826 un siècle chocolat" "200 Jahre Halloren"		
Marketing	"Desde 1826"		"1905-2005 Dairy Milk 100 years"		"Old Gold – boldly original since 1916"

Table 4. Purposes and forms of TADs.

DISCUSSION

Prior studies provided valuable insights how history can serve as a strategic resource (Brunninge, 2009; Foster et al., 2017; Godfrey et al., 2016; Hatch & Schultz, 2017; Iglesias et al., 2020; Suddaby et al., 2010), to (re)create or reaffirm organizational identity (Foster et al., 2011; Holt, 2006; Ravasi & Schultz, 2006), and communicate organizational values (Foster et al., 2011; Stinchcombe, 1965). These studies often focus on extensive discourse and narratives as communicative devices (see for an exception Hatch & Schultz, 2017). Building on organizational symbolism, we investigated how symbols can function as carriers of history, identity, and values. Specifically, we studied a novel and largely ignored symbol: Temporal anchoring devices. TADs are short and subtle, but by relating to the organization's history, identity, achievements, anniversaries, and products, and drawing on the wider time reckoning system they are easily accessible and parsimonious carriers of information. The advantage of TADs is that organizations do not have to utilize extensive narratives and that audiences do not have to spend much effort searching for and consuming information. Through the research reported here, we explored how organizations make use of TADs and discovered several patterns. Our research revealed that TADs serve different purposes – communicating history, creating a sense of stability and continuity, foregrounding organizational characteristics, reinforcing group membership, and marketing. Furthermore, we observed the use of five different forms of TAD: TADs referring to the (i) organization, (ii) anniversaries, (iii) awards and achievements, (iv) buildings and facilities, and (v) products. Taken together, our findings carry a few implications worth considering.

Theoretical implications

Prior studies have focused of organizations' use of history for specific purposes, for instance the construction of identity and legitimation of the organization (e.g., Blombäck & Brunninge, 2009; Foster et al., 2017; Foster et al., 2011; Kroeze & Keulen, 2013; Kroezen & Heugens, 2012; Suddaby et al., 2010). Although these studies show that history can be very useful for organizations, they do not answer the question why organizations use history nor when they are more likely to do so. Extending on the research by Hatch and Schultz (2017), who have shown how actors are prompted to use history, we show both internal and external events that can cause organizations to use historical artifacts, in our study TADs. Furthermore, the historical artifact's purpose varies over time, showing that not only do organizations activate history, but they use it to serve the needs of the present and future, creating a dynamic intertemporal connection. Few prior studies have studied how history is

recontextualized or renewed however, these studies often focus on one or two instances of history being re-invoked by organizations (e.g., Hatch & Schultz, 2017; Ravasi & Schultz, 2006; Schultz & Hernes, 2013). Our study allowed to observe multiple instances per organization over an extant period of time, resulting in the observation of five different purposes, or recontextualizations, of history. That we were able to observe several different purposes might be caused by the equivocality of TADs. However it is for future research to investigate when, how, and how often history and historical artifacts can be re-invoked by an organization and attributed a different purpose, and most likely a different meaning.

A main finding of our study is the use of TADs to bring a sense of continuity and stability in otherwise turbulent and uncertain times – either caused by internal organizational changes or external changes and events. Although prior studies focused on the strategic use of history (e.g., Hatch & Schultz, 2017; Ravasi & Schultz, 2006; Suddaby et al., 2010) or historical references more specifically (Pecot & De Barnier, 2017; Pecot et al., 2018) to further organizational goals, they paid little attention to history as a resource to fence of threats to the stability of the organization and as a tool to reduce uncertainty for both internal and external audiences. That is surprising, because it is well know that humans tend to look in the past for reaffirmation when facing uncertainty and threats (Balmer, 2011; Weick, 1979, 1995). Indeed our findings allude to TADs – and history more broadly – not being only strategic resources to further organizational needs, but as a tool used in reaction to uncertainty and instability to ease audiences and keep the organization afloat. Although by no means we want to imply that TADs are such a powerful symbol that they can counter uncertainty caused by death of organizational leaders or changing cultural, political, and social environments, they do seem to be utilized during such radical events and changes. Whether TADs are also effective in countering instability and uncertainty remains a question for future research.

In addition, we believe the study of TADs contributes to the literature on materiality, specifically the stream combining time and materiality (Bansal & Knox-Hayes, 2013; De Vaujany, Mitev, Laniray, & Vaast, 2014; Hamilakis & Labanyi, 2008). TADs that refer to the past are vestiges or enactments of times gone by, materialized and acted upon in the present. TADs used on products, buildings, or in logos, etc., become to represent much more than a date, infused with meaning and value associated with those dates. Because the TADs are used on, to varying degree, enduring objects (sometimes preserved for decades by collectors), they can potentially guide audiences' affective responses and lead to particular interpretations (Beckstead, Twose, Levesque-Gottlieb, & Rizzo, 2011).

We also found that TADs are not a necessary tool for organizations to survive and thrive, mitigate uncertainty, communicate history, or position themselves in new and unfamiliar environments. In the case of Cadbury, we found little use of TADs, highlighting that organizations have multiple strategic resources, and various ways to construct and affirm their identity, or communicate their values. Although we also see that Cadbury experiences less abrupt organizational changes, and operated in more familiar environments, we cannot overlook the potency of the Cadbury name, identity, and image. Their focus on quality and value, supported by the Quaker operating philosophy and what the Bournville Factory represented, and the stability of the name and re-occurrence of Cadbury-purple, seem to be possible substitutes for TADs.

Limitations and Future Research

Although we believe that our study sheds light on a novel and unexplored phenomenon and contributes to the organizational history and communication literatures, our study has several limitations. First, we rely on three organizations that operate in the same industry. Consequently, the industry might be driving our results and conclusions. The chocolate industry is rich in tradition, valuing authenticity, and craftsmanship (Rinzler, 1977; Squicciarini & Swinnen, 2016) which might make these organizations more prone to use references to the past and history, especially during organizational and/or environmental changes. Other industries, for instance that of software development or the biomedicine might pay more attention to innovation and speed of development. In these industries, TADs that refer to the past might be used less as a basis for legitimation, and consequently used less in the wake of change as well. Consequently, if we would have studied organizations in a different industry, our findings might have taken us in a different direction. Therefore, future research should study the use of TADs in various additional industries.

Second, we relied on secondary data to study the use of TADs. Tracing back the histories of these organizations was useful for our research purpose however, going back more than 200 years in time has its own challenges. We have been very careful and rigorous in our data collection, but we can only access what has been preserved. Some artifacts will have been lost forever, which may have led to missing instances in which TADs were used. However, because we focus specifically on the changes in the use of TADs and did not rely on an individual artifact but rather on multiple artifacts, and supportive documents, we believe that this bias will be minimal. Our main concern is that we may have missed other purposes and forms of TADs that would have expanded our study. Future research can

conduct a larger and contemporary study on the motivation to use and use of TADs by organizations, to expand the situations that might lead to the use of TADs identified in this study. It would also be fruitful to conduct interviews with organization's decision-makers to gain insights on their drivers to use, discontinue the use, or abstain from the use of TADs. Furthermore, interviews with internal and external audience members would be useful to discover how they interpret TADs and whether TADs have successfully communicated their intended meanings.

In general, we believe that TADs deserve more attention in future research. In this study we have mostly focused on those relating to the distant past and have only studied rare occasions of TADs referring to the more recent past, present, or future. This is also caused by our setting and historical approach. However, TADs referring to different time periods are likely to represent different organizational characteristics, ambitions, and values. Hence, it is also likely that these will be used in different circumstances. Given the ubiquitous use of TADs by organizations, organizational scholars should pay more attention to them, their meanings and the motivation of organizations to use them.

Appendix A: Data specification

Artifact	Cadbury	Suchard	Halloren	Total
Year-unique number of artifacts	1123	515	345	1983
Number of artifacts no date of origin	123	77	0	200
Total number of artifacts (including repetitions)	1356	594	389	2339
Advertisement	207	353	142	702
Trademark WIPO	646	3	0	649
Building	10	8	4	22
Product packaging	112	54	63	229
Invoice	4	14	18	36
Letter	2	5	9	16
Postcard	1	56	8	65
Book or magazine	4	7	3	14
Vehicle	12	2	1	15
Annual statement	0	0	2	2
Internal communication	7	4	1	12
Merchandise	78	59	23	160
Other	39	27	68	134

The category *other* includes financial statements, stamps, product displays, drawings, press announcements, plastic or paper bags, etc. These did not seem to fit in any other category. Trademark WIPO only includes the registration of trademarks with the World Intellectual Patent Organization, other logos were found on artifacts and categorized accordingly.

SIGN OF THE TIMES: EFFECTS OF TEMPORAL ANCHORING DEVICES ON AUDIENCE MEMBERS' PERCEPTIONS OF ORGANIZATIONS

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Abstract

Temporal anchoring devices (TADs) are short references to time often accompanied by a descriptor (e.g., 'since *year*'). While the use of TADs by organizations seems ubiquitous, prior studies have paid little attention to the phenomenon. This paper utilizes theories on organizational temporality, sign theory, and visual attention to develop and test hypotheses concerning the likelihood that TADs are noticed and the effects of TADs on audiences' perception of the organization. Specifically, we argue that a TAD is less likely to receive attention, but more likely to be noticed, in a cluttered surrounding. In addition, we argue that TADs – whether referring to the past, the present, or the future – positively affect audiences' perception of the organization. We test these hypotheses in two laboratory experiments. In the first experiment, we evaluate attention devoted to TADs using eye-tracking technology. We find that a TAD being noticed and paid attention to is contingent on its surroundings, and whether an individual is repeatedly exposed to the TAD. In the second experiment we use a survey to test the perceived effects of TADs. We find that past TADs increase perceptions of the organization's quality, present TADs increase perceptions of how exciting and ambitious the organization is, and future TADs positively affect all three dimensions. This paper offers a novel perspective on the effects of symbols on individuals' perceptions of an organization and empirically tests underlying assumptions often made in the literature regarding organizations' use of symbols.

INTRODUCTION

Temporal anchoring devices (TADs), defined as short references to time often accompanied by a descriptor, are extensively used by organizations and span country, industry, and cultural boundaries. A prominent example is the use of 'since *year*' on organizations' buildings, on products, in organizations' logos, and/or on commercial vehicles. Figure 1 presents several examples of TADs. Given the widespread use of TADs it is surprising that the phenomenon has received little focused attention in prior organization scholarship. Previous studies investigating TADs, have limited their efforts to TADs representing distant years in the past, often called historical references (e.g., Beck et al., 2016; Blombäck & Brunninge, 2009, 2013; Hudson, 2011; Hudson & Balmer, 2013; Pecot & De Barnier, 2017; Pecot et al., 2018; Suddaby et al., 2010), which is not surprising given these studies' focus on organizational history or heritage. These studies propose that organizations use historical references to seek legitimacy and trustworthiness (Suddaby et al., 2010), establish reliability (Blombäck & Brunninge, 2009), indicate past and future quality (Desai, Kalra, & Murthi, 2008), invoke feelings of nostalgia (Hudson, 2011), and show permanence and a record of accomplishment (Hudson & Balmer, 2013). Although this work sheds some light on the purpose and effects of one sub-category of TADs, namely TADs referring to the (distant) past, organizational scholars have so far overlooked the existence, meaning, purposes, and effects of TADs more generally, including those referring to the present or future. Therefore, the main aim of this paper is to theorize about, and test, what effects a wider spectrum of TADs – referring to the past, present, or future – have on audience members' perception of the organizations using them. Hence, the research question: What are the effects of TADs on individuals' perception of the organization?

Figure 1. Examples of TADs. Left to right: Save the Children "100 years" (US), Restaurant Rijslust "est. 2019" (NL), Firm of the Future (NL).

Importantly, prior studies take for granted that TADs – and symbols in general – are noticed by audience members (e.g., Beck et al., 2016; Blombäck & Brunninge, 2009; Pecot et al., 2018; Suddaby et al., 2010), even though TADs are often small and subtle and therefore

can be easily overlooked. However, for TADs to have any effect, they must first be noticed and paid attention to. Hence, a second aim of this paper is to test whether, and under what conditions, TADs are noticed and paid attention to by audience members.

More specifically, our focus is on the effect of TADs on external audiences' perception of the organization. Prior organization literature has primarily examined how historical references (potentially) affect organizations' internal audiences. For instance, Hatch and Schultz (2017) showed how a particular historical artifact resurfaced twice in an organization lifespan. In the first instance, it inspired a team of brewers to name a new beer after a slogan important to the founder. In the second instance, the slogan helped to bring groups together following the expansion of the organization. Similarly, focus has hitherto been on how organizations use history for mainly internal organizational processes (e.g., Blombäck & Brunninge, 2009, 2013; Brunninge, 2009; Hatch & Schultz, 2017; Schultz et al., 2006; Suddaby et al., 2016; Zundel et al., 2016). In these studies, history, for instance, facilitates the construction of a new corporate identity (Blombäck & Brunninge, 2009) or organizational identity (Zundel et al., 2016), fosters a sense of continuity during the strategy making process, by (de-)legitimizing options in line with past choices (Brunninge, 2009), or enables identity work that creates an affiliation between the individual and the collective (Suddaby et al., 2016). However, internal and external audience members are very likely to interpret and use TADs differently because of differences in available information about the organization and their objectives. Internal members are socialized in the organization, have access to internal documents, and are more likely to have a good understanding of the organization, its structure, vision, and strategy. External audience members are much more likely to rely on easily accessible information in the construction of their judgment and evaluation of the focal organization, because gaining access to other sources of information even if possible, would require considerable effort.

Among the various sources of information used by external audiences are symbols, defined as 'categories of social construction with ascribed meanings defined by the agents and audiences who use them' (Schnackenberg, Bundy, Coen, & Westphal, 2019, p. 376). Symbols can communicate the characteristics of organizations that would otherwise be unobservable. For instance, Montiel, Husted, and Christmann (2012) found that certification of management standards communicates desirable organizational conduct. Although certification of management standards is not necessarily expressed with a symbol, many

symbols exist that signal certification[13]. Other examples of organizational symbols are the display of industry awards (Zott & Huy, 2007) and first placement in certification contests (Rao, 1994), which communicate an organization's reputation and status in an easily accessible fashion to external audiences. TADs are symbols that communicate the organization's age, longevity, survival and an organization's temporal origins – the historical conditions in which the organization was founded, its temporal orientation, or an intended end (e.g., Horizon2020 – The EU's research program initiated in 2014 and ending in 2020). Both the organization's age and its temporal origins inform audiences of possible underlying traits that the organization may possess, for instance older organizations can be perceived as being more legitimate and trustworthy (Suddaby et al., 2010), young organizations using a present TAD can be perceived as novel and exciting, and TADs referring to a future end may highlight the temporality, rarity, and exclusivity of an organization. The use of TADs reflects a strategic decision by an organization's top management (Burghausen & Balmer, 2014a) and communicates what they deem important (Feldman & March, 1981). But once decision makers choose to use TADs, they have little control over how TADs are perceived or interpreted by audiences, especially external audiences. Given that TADs are often short, there is scope for ambiguity in their interpretation (Eisenberg, 1984), and a TAD might carry different meanings depending on who is the evaluative audience. In this paper our focus is solely on external audiences (henceforth audiences), because these audiences are often overlooked in the literature on the use of symbols by organizations, and because of the particular barriers to deciphering the meaning of TADs (such as a lack of information) that these audiences have when observing them.

Furthermore, TADs are a special and unique type of symbol. TADs evoke the time reckoning system of the Gregorian Calendar[14], which is almost universally present and one of the most taken-for-granted institutions of modern society. The year counting system has its origins in 1582 and became widely used in the 19th century with the rise of industrialization calling for coordination, scheduling, and planning (Breasted, 1935; Swerdlow, 1974; Zerubavel, 1982). Consequently, TADs have the potential to reach and appeal to a much wider audience than more limited symbols for instance those evoking religion, culture, or

[13] See for examples of visual symbols implying ISO certification https://www.iso-9001-checklist.co.uk/how-to-check-if-a-company-is-ISO-9001-certified.htm.

[14] Countries that do not use the Gregorian Calendar are Afghanistan, Iran, Ethiopia, and Nepal. Bangladesh, India, China, and Israel use other calendars alongside the Gregorian Calendar. Taiwan, Thailand, North Korea, and Japan use modifications of the Gregorian Calendar (WorldAtlas).

nationality. In addition, TADs represent generic and almost universal references to past, present, future. Although the underlying meanings attached to a particular year may differ, varying and dispersed audiences will recognize that "1988" belongs to the past, "2020" to the present, and "2030" to the future. Hence, the appeal of TADs as the time reckoning system it often refers to finds traction with a large and varied audience.

To test the conditions under which TADs are noticed and paid attention to and the effects TADs have on external audiences' perception of the organization, we designed two controlled laboratory experiments. In the first experiment we use eye-tracking technology to measure the attention paid to TADs and the contingencies that increase or decrease the attention paid to TADs. In the second experiment we use a survey-based experiment to infer the effects of TADs on audiences' perceptions of organizations.

In summary, we intend to contribute to the literature on organizations' use of temporal references and symbols by theorizing about and testing a broader spectrum of temporal references i.e., to the past, the present, and the future. To our knowledge, only studies in organizational and corporate history have thus far focused on TADs referring solely to the distant past, often labeled 'historical references' (e.g., Beck et al., 2016; Hudson & Balmer, 2013; Pecot & De Barnier, 2017; Pecot et al., 2018; Suddaby et al., 2010; Urde, Greyser, & Balmer, 2007). This focus is surprising given the growing interest of organization scholars in temporality, defined as 'the ongoing relationships between past, present, and future' (Schultz & Hernes, 2013, p. 1). A sole focus on historical references explores how the past can be used to serve present and future needs, or how the past is recreated or interpreted in the present. We contribute by also showing how references to the present and the future affect audiences' interpretation and perception of an organization in the present. Furthermore, given the seemingly prevalence of organizations' use of TADs referring to the recent past, the present, and the future, the disregard of the full range of TADs in scholarly work is even more surprising. In addition, we contribute to the literature on symbolism by theorizing about, and testing, when it is that audiences observe and pay attention to TADs. Although organizational scholars have increasingly recognized symbols as important devices for communicating valuable information to audiences (e.g., Elsbach, Sutton, & Principe, 1998; Fiss & Zajac, 2004; Schnackenberg et al., 2019; Westphal & Zajac, 2001), most studies have taken for granted that symbols are noticed, paid attention to and inform audiences' evaluations of organizations.

We begin by developing our hypotheses in the following section, drawing on sign theory, visual attention, and temporal distance. Subsequently we describe our methods, and

the two experiments. We then present our results. We conclude by discussing our results, pointing out the contributions of our study and its limitations, and offering suggestions for future research.

THEORY & HYPOTHESES

TADs

Individuals rely on available information, clues, and heuristics to determine their judgment, decision making, and behavior (e.g., Gigerenzer & Gaissmaier, 2011; Kahneman, Slovic, & Tversky, 1982; Kahneman & Tversky, 1984). From a rational perspective, individuals should engage in due diligence when collecting information in order to come to non-biased, objective judgment, decision, and/or behavior (Simon, 1979b, 1990). However, because of individuals' cognitive limitations (Abelson, 1985), the investment of effort needed to come to a rational choice (Simon, 1979a), and environmental stimuli overload (Lee & Lee, 2004; Wohlwill, 1974), the information relied on to inform judgment, decision, and behavior is often incomplete and inaccurate. Consequently, in an attempt to overcome problems associated with information acquisition, accuracy, and completeness, individuals often rely on symbols to inform their judgment, decision making, and behavior. Symbols are easily accessible, subtle, and parsimonious carriers of information (Pierce, 1980), and hence a source of information that requires little effort on the part of audiences.

TADs are a specific type of symbol, which are likely to be understood by a wide range of audiences, as they are often derived from the almost universal institution of the Gregorian calendar. From an early age external audience members are familiarized and socialized with the institution and year reckoning system, making it likely that TADs have widespread appeal. Contrary to religious, country, or local references that often appeal to a more limited sized and specific audience. Consequently, TADs are a fairly easy to use and neutral symbol for organizations to employ and reach their audiences.

TADs communicate two distinguishable types of information to audiences. First, TADs can indicate age and more generally a lifespan. 'Since', 'established', 'founded', and other used variations, followed by a year or date indicate when an organization was (allegedly) founded, and hence its age can be easily inferred. References to the present and future may indicate an organization's aspired lifespan (e.g., 'Horizon 2020', the leading EU research and innovation program to date), a beginning (e.g., 'coming spring 2020'), main purpose (e.g., 'The History Factory – Transforming Futures'), or its temporal orientation (e.g., 'firm of the future' or 'anno now'). Second, TADs can indicate the organization's

temporal origins. By that we mean that a 'since *year*', for instance, indicates the historical conditions in which the organization was founded. Thus, besides indicating age, TADs inform audiences about the founding context of an organization and the potential effects it can have on the organization.

Studies focusing on organizational imprinting have argued and shown that organizations take on elements of their environment at the time of founding and that these elements persist over time (Baum, 1999; Boeker, 1988; Hannan & Freeman, 1987, 1989; Kroezen & Heugens, 2012; Levinthal, 2017; Marquis, 2003; Marquis & Tilcsik, 2013; Stinchcombe, 1965). Stinchcombe (1965), showed that the employment patterns across industries founded in the same period reflect the socioeconomic conditions prevalent at the time of their founding. Kroezen and Heugens (2012) discovered that the identities of breweries were imprinted by and reflect the identities of authorative insiders, the preferences of social audiences, and organizational peers. TADs that make the year of founding explicit allow inferences about the organization, based on what is believed to be its founding conditions. TADs can thus allude to the temporal origins of an organization and the state of society at that time.

However, unless the evaluative audiences live (e.g., present TADs' audiences) or have lived during that time and have a vivid and accurate memory, TADs evoke a reproduced image of history as what it must have been like. This later claim is supported by literature in psychology, more specifically on temporal distance (Trope & Liberman, 2003, 2010). According to this literature, observers make spontaneous trait inferences the farther removed in time an object or entity is, whether these are accurate or not (Trope & Liberman, 2010). This could mean that, audiences confronted with a distant past TAD might attribute traits that are unrelated to the organization, or even the time the TAD refers to, and that this spontaneous attribution would increase with increase in distant years used in TADs. The more so for external audiences, that have little other information to base their judgment of an organization on. Furthermore, these inferences are more coherent and at a higher level of abstraction than inferences made about events, people, or objects that are nearer in time (Trope & Liberman, 2003, 2010). TADs enable these inferences about organizations by stating the temporal origins and/or orientations of the organization.

Attention to TADs

Before TADs – and symbols more generally - can inform judgment, decision making, and behavior, they must be noticed by their intended audiences (see for instance Fehr &

Rangel, 2011; Shi, Wedel, & Pieters, 2013). Furthermore, given the individuals' cognitive limitations, time constraints, and the accessibility of information, not all available information will be taken into account when forming a decision, evaluation, or judgment (see for instance Simon, 1990). Given the constraints placed on accessing and processing information, the question arises whether symbols that are often small and subtle are observed and considered when individuals make a decision, evaluation, or judgment. Yet, prior studies on the use of symbols by organizations have often (implicitly) assumed so or at least assumed that the symbols that were studied are noticed by relevant audiences and are meaningful to them (e.g., Graffin & Ward, 2010; Pecot et al., 2018; Rafaeli & Worline, 2000; Rao, 1994).

For several reasons pertaining to cognitive limitations it is unlikely that *all* symbols will be noticed, paid attention to, and considered. First, the numerous stimuli an individual is exposed to, create an overload of information that is impossible to process (e.g., Lee & Lee, 2004; Wohlwill, 1974) or noticed. Noticing is the conscious awareness of a stimuli (Mason, 2011; Truscott, 1998). Symbols contribute to this information overload, hence even if they are noticed and paid attention to, they might not inform judgment and decision-making as they compete with other informative cues. Second, human ability to perceive objects is limited, consequently (some) objects are overlooked (e.g., Spelke, 1990). Thus, symbols may not even be noticed and hence be excluded from the set of cues that informs decision-making and judgment. Third, the constraints on an individual's time and cognitive resources make it unlikely that all symbols will receive attention (e.g., Abelson, 1985; Simon, 1979a), even if they are noticed. In other words, a symbol might be noticed, but not be actively attended to. Again, this would exclude the symbol as a basis for judgment, evaluations, and behavior. In other words, there are various ways in which a symbol might either not be noticed, paid attention to, or taken into consideration.

We argue that TADs are likely to receive attention for several reasons. First, it is a symbol that has its origins in an almost universal institution – the Gregorian Calendar. A wide and diverse audience is familiar with this institution. Familiarity is found to increase attention paid to visual cues (Wyble, Bowman, & Potter, 2009). Hence, TADs as a familiar symbol that requires little effort to interpret will be likely to receive attention. Second, prior studies found that temporal distance and proximity affect judgment and evaluation (Trope & Liberman, 2003, 2010), as such temporal distance and proximity serve as an anchor for audiences to base their perception on. According to Trope and Liberman (2003, 2010) individuals base their perceptions on temporal distance as many of the everyday life decisions pertain to events that either take place in the future or are based on prior experiences. They

found that the temporal distance to those events and experiences systematically alter the perceptions of these events and experiences. In short, at larger temporal distances 'people see the big picture' (Trope & Liberman, 2003, p. 405), while temporal proximity induces individuals to pay more attention to details. TADs make explicit this temporal distance and proximity, and anchor and facilitate the construal of perceptions. Symbols in general are accessible, but also easily overlooked. TADs in particular are appealing as they are easy to process, given their origins in an almost universal institution and their ability to explicitly and visually express temporal distance and proximity – a known criteria of evaluation. Consequently, we believe that audience members are likely to pay attention to TADs. Contributing to prior studies on symbols and historical references, we explicitly test this assumption in hypothesis 1;

H1: An individual is likely to pay attention to a TAD.

The visual environment also affects the likelihood that a TAD will be noticed and paid attention to. Specifically, clutter – the number of objects in the environment that compete for attention – influences whether an individual object is noticed and how much attention it receives (e.g., Ha, 1996; Ha & McCann, 2008; Pieters, Warlop, & Wedel, 2002; Pieters, Wedel, & Zhang, 2007; Qin, Koutstaal, & Engel, 2014). With clutter we refer to any kind of visual distraction, whether by the organization's design or because of environmental conditions (e.g., traffic, billboards, trash, etc.). The different objects compete with each other for the individual's attention, yielding two effects. First, the more objects, the more competition, and the less likely a single object will receive attention. That is, because of the additional objects each object receives less attention, as attention needs to be divided across the number of objects. In other words, the total amount of attention paid to TADs will decrease, because of the competition for attention created through the increased number of objects and because the brain is stimulated to absorb more elements, shortening the time paid to each individual element. Hence;

H2a: An individual will pay less attention to a TAD if the environment is cluttered.

Second, clutter can stimulate brain activity (Jaeggi et al., 2007; Paas, Renkl, & Sweller, 2004) which makes it more likely that an object is noticed, even though it receives

limited attention. That is, the more elements in an individuals' surrounding, the more the brain is stimulated to search and scan the environment, and notice elements. After all, humans need to be aware of the elements in their environment, for instance if a possible element can cause danger. Although TADs are unlikely to pose a threat, that can only be assessed after at least noticing the element. Hence, because brain activity is stimulated by clutter, the likelihood that a TAD is noticed (albeit time attended to it is shorter, see h2a) increases. Consequently hypothesis 2b:

H2b: An individual is more likely to notice a TAD if the environment is cluttered.

Hypotheses 1 and 2 focus on the conditions determining when TADs are likely to be noticed by audience members. These hypotheses are an empirical application of theories on visual attention to the study of TADs – and symbols more generally. These hypotheses test implicit assumptions in prior studies on the use of symbols and historical references by organizations. Testing these implicit assumptions is necessary as TADs must be noticed and receive attention in order for them to subsequently affect audience members' judgment, decision-making, and behavior.

Effects of TADs

Suddaby et al. (2010) propose that historical references are used by organizations seeking legitimacy. Their argument relies on the premise that old age indicates accomplishment, competence, and reliability (Carroll, 1984; Hannan & Freeman, 1984). Accordingly, organizations that indicate their old age, signal that they are accomplished and legitimate (Suddaby et al., 2010). Beck et al. (2016) found that individuals perceive organizations to be more innovative if the organization uses a TAD referring to a distant year in the past. A possible explanation for their finding could be based on the argument that organizations need to be innovative to survive (Eisdorfer & Hsu, 2011; Eisenhardt & Martin, 2000; Pil & Holweg, 2003); observers assume that old organizations must have been innovative to have survived for a long period. However, whether this assumption holds has not been tested. Both Suddaby et al. (2010) and Beck et al. (2016) arguments are in line with the literature on temporal distance. References to the distant past allow audience members to infer high-level, abstract traits (Trope & Liberman, 2010), such as legitimacy, tradition, or authenticity. Furthermore, with more distant times these inferences become more dispositional and less situational (Trope & Liberman, 2003, 2010). That is, the evaluated

entity's achievements are believed to be caused by its inherent capabilities and characteristics, for instance its quality, rather than resulting from favorable environmental and temporal conditions or luck.

Recent studies by Pecot and colleagues examine the effects of historical references on consumers' perception of a brand and their willingness to buy (Pecot & De Barnier, 2017; Pecot et al., 2018). In Pecot and De Barnier's (2017) study consumers indicated that they believe that organizations face a tension between being traditional and innovative. The former represented by a historical reference, and the latter associated with the perception that organizations need to be modern and forward looking to survive and thrive. In addition, in a set of quasi-experiments, Pecot et al. (2018) found that historical references increased consumers' perception of the brand's credibility and quality and their willingness to pay a premium for its products. In summary, prior research found different effects of past TADs, increasing perceptions of the organization's ability to be innovative (Beck et al., 2016), raising perceptions of a tension within the organization (Pecot & De Barnier, 2017), and increasing perceptions of credibility and quality and increasing willingness to pay a premium (Pecot et al., 2018). These studies, in combination with the premise, put forward in the literature on organizational history, that an organization's longevity might indicate its quality (Blombäck & Brunninge, 2009; Rowlinson & Hassard, 1993; Suddaby et al., 2010), lead to the hypothesis that the use of past TADs will increase individual's perception of the quality of an organization;

H3a: TADs referring to the past positively affect an audience member's perception of the quality of the organization.

Although previous studies are informative about one subset of TADs, those referring to the past, they are less informative about the effects of TADs referring to the present and the future, on audience members' perception of the organization, and the conditions determining when 'being old' (or young or future oriented) benefits an organization and when it does not. TADs referring to the past and present are often interpreted as indicators of the organization's age; a TAD referring to the past indicates old(er) age, while a TAD referring to the present represents young(er) age. In most societies, people's age is an indicator of status and affects social interactions (Neugarten et al., 1965). Being of a certain age comes with a set of expectations of how that person behaves. In social sciences, these are referred to as age norms (Eisenstadt, 1956; Lawrence, 1984, 1988, 1996; Neugarten et al.,

1965). Prior studies have indicated that individuals also hold age-related expectations with respect to organizations (e.g., Pecot & De Barnier, 2017; Pecot et al., 2018; Suddaby et al., 2010). On the one hand, older organizations are supposed to be more credible, trustworthy, accomplished, stable, and authentic, amongst other things. On the other hand, younger organizations are expected to be more risk seeking (Coad, Segarra, & Teruel, 2016), unpredictable, and more productive than older organizations (Bigsten & Gebreeyesus, 2007), but are also believed to be less stable and less trustworthy (Thornhill & Amit, 2003). Furthermore, young(er) organizations, unlike their old(er) counterparts have not yet had the opportunity to create a proven track record. Hence, present TADs may not only signal traits associated with young age, but also signal why experience and a proven track record is missing. The novelty of younger organizations, the perceptions of increased risk seeking and unpredictability raises the perceptions of how exciting the organization is (He, 2012; Okazaki, 2006). However, present TADs do not signal the organization's quality – they do not represent a long and successful history. Consequently, we do not expect these TADs to affect the perception of quality, yet we expect them to affect perceptions related to younger age and novelty, specifically the perception of excitement of the organization. Hence;

H3b: TADs referring to the present positively affect an audience member's perception of the excitement of the organization.

TADs referring to the future are different from those referring to the past and present, as it is difficult to determine the organization's age from a reference to the future. Instead, these TADs communicate the organization's focus on the future. Visualizing the future has been argued to improve performance and the likelihood that goals are achieved (Anthony, Bennett III, Maddox, & Wheatley, 1993; Carton, 2014). In a similar vein, TADs referring to the future communicate that the organization is forward looking, has plans, aspirations, ambitions, and goals. For instance, TADs indicating that an organization will be established (e.g., "opening soon" or "coming next winter") communicate a clear aspiration of an owner that is starting a new organization. TADs referring to the future can also indicate deadlines. By making those explicit, the likelihood of achieving the deadlines increases (Arvedson, 1975; Bluedorn & Denhardt, 1988). For instance, the use of the year '2020' in 'Horizon 2020', indicates the deadline set for the program, aids in its visualization, and hence possibly affects the likelihood of achieving the program's goals in the stipulated timeframe.

However, these TADs do not show the organization's quality based on its history and proven track record. Nor does a future TAD show the perceived excitement of the organization signaled by its young age. However, TADs referring to the future can positively affect perceptions of the extent to which the organization is ambitious, forward looking, and innovative. Hence, we hypothesize that future TADs positively affect audiences' perception of the ambitiousness of the organization;

H3c: TADs referring to the future positively affect an audience member's perception of the ambitiousness of the organization.

Although we refrain from stating explicit hypotheses on the effects of past TADs on the perceptions of excitement and ambition, present TADs on the perceptions of quality and ambition, and future TADs on the perception of quality and excitement, we have some speculations and in the results we will observe their effects. The latter should be corroborated in future hypotheses testing. We have argued that the effects of past, present, and future TADs on respectively perceptions of quality, excitement, and ambitiousness of the organization is grounded in the relationship of these qualities with time. However, that does not imply that the opposite should hold, e.g., present TADs evoking lower perceptions of quality. Although, the latter might be the case, if indeed quality is strongly associated with old age and a long history, quality is a complex concept with multiple dimensions (Davies, Chun, Vinhas da Silva, & Roper, 2004). Consequently, present TADs could lead to higher perceptions of quality, because they signal being new, possible more innovativeness, and, hence, not out dated. Yet, because of the signaled lack of history, experience, and old age, they might also lead to lower perceptions of quality. Similar arguments would hold for the other alternative hypotheses: there might be a positive effect, there might be a negative effect, or there simply be no effect. Hence, we refrain from making explicit hypotheses on the direct effects of TADs on other qualities.

However, we argue that the effect of TADs on audiences' evaluation of the organization decreases if the used TAD is not in line with what is thought of as appropriate, desirable, and valuable in the organizational field the focal organization belongs to. Organizational field refers to 'those organizations that, in the aggregate, constitute a recognized area of institutional life: key suppliers, resource and product consumers, regulatory agencies, and other organizations that produce similar services or products' (DiMaggio & Powell, 1983, p. 148). Organizations belonging to the same field tend to be

similar due to isomorphic pressures (DiMaggio & Powell, 1983). These pressures create homogeneity among individual organizations in organizational fields, resulting in widely shared cultural values and practices. Organizations that do not adhere to the norms of the field can suffer negative consequences most notably diminished legitimacy, leading to lower chances of success and survival (Hsu, Hannan, & Koçak, 2009; Hsu, Hannan, & Pólos, 2010; Zuckerman, 1999). These negative consequences are potentially due to audiences having more difficulty interpreting and categorizing these organization (Kovács & Hannan, 2010). Accordingly, in some fields, innovation and focus on the future are especially valued, for instance high-tech fields, while in other fields such as crafts and chocolates[15], tradition, history, and authenticity are highly regarded. Organizations signal their membership in an organizational field by using (among other things) symbols that are associated with the values of the field (Schnackenberg et al., 2019; Scott, 1995b).

Prior studies focusing on symbolism argued that symbols that adhere to the expectations of the organizational field create isomorphic value (Bitektine, 2011; Rao, 1994; Schnackenberg et al., 2019; Suchman, 1995). Because, isomorphic value is the value arising from belonging to a field, the symbol's value is contingent on the field in which it is being used (Schnackenberg et al., 2019). Symbols that have isomorphic value are for example, organizational names (Glynn & Abzug, 2002), logos (Rafaeli et al., 2008), and displaying business licenses (Rao, 1994) or certificates (Schepers, 2010). However, because of the isomorphic pressures in a field and the necessity for organizations to conform to prevailing norms, isomorphic value might be difficult to observe. That is, conforming is what the organization is ought to do and legitimates its existence and membership in a field. Other organizations will also conform and display similar practices and symbols, diminishing relative value differences between organizations.

Some organizations however, may utilize symbols that do not conform to the prevailing values and expectations of the field, or even violate said values and expectations. For instance, an organization, belonging to a traditional field, that uses a TAD referring to the present, while the field's norm would be a reference to the past. These organizations might mimic the practice of displaying a TAD, but not the content. Organizations deviating from the norm, and explicitly showing their deviation, cause confusion and interpretation

[15]One area where we can see that certain characteristics are associated with some fields and are less so with respect to other fields, is in organizational research. Although 'innovation' and 'tradition' could characterize any organization regardless of its field, researchers tend to focus on certain fields when studying innovation (e.g., semiconductors/business venturing/biotech/pharmacy), and others when focusing on tradition (e.g., chocolates/crafts/beer and wine).

difficulties, leading to negative evaluations by their audiences. Hypothesis 4 challenges the assumption in organizational and corporate history, that a long history will generally benefit an organization (e.g., Blombäck & Brunninge, 2009; Burghausen & Balmer, 2014b; Delahaye et al., 2009), with the exception of studies on past stigmatizing and delegitimizing events (e.g., Booth et al., 2007). Instead, we argue that it depends on the temporal orientation of the entire field, claiming that a TAD that is not aligned with the temporal orientation of the field will harm the perceptions of the organization.

H4: Using a TAD that is not in line with the values of the organizational field will negatively moderate the relationship between TADs and audiences' perception of the organization.

METHODS

To test our hypotheses, we designed two experiments. In *Experiment 1* we used eye-tracking technology to test hypotheses 1 and 2. *Experiment 2* is survey-based and tests hypotheses 3 and 4. Both experiments were conducted at a reputable university lab. Participation was on a voluntary basis and participants received a fixed modest monetary reward for their participation[16]. The experiments were conducted in separate cubicles that were soundproof. Participants could partake in either Experiment 1 or Experiment 2. We restricted participation to one experiment, because we wanted to prevent spillover effects. Namely, an individual that participates in both experiments could at some point figure out that the our study concerns TADs, which could bias results. In total 101 subjects participated in Experiment 1 and 202 subjects participated in Experiment 2. The instructions of the experiments can be found in Appendix A.

At the beginning of the experiment the participants gave their consent to take part and were made aware that they could withdraw at any point. In the written instructions they read before the experiment began, we explained that we are interested in their evaluations of organizations and that there are no "right" or "wrong" answers. Although we did not want to inform them about the specific goal of the experiment, we did not want to mislead them. The experiments were conducted during February 2019 (i.e., any years before 2019 refer to past TADs, '2019' refers to present TADs, and years after 2019 to future TADs). Students were

[16] The experiments were parts of a series of experiments. That is, students participated in several experiments consecutively and either in our eye-tracking study or in the survey experiment. In total, participants spent 20-30 minutes on the experiment. In return they received €7,- for volunteering in the experiment, regardless of their answers.

recruited through an online system and through distributing flyers on the University campus. Students could register online to take part in the study, but they could also walk-in without an appointment. During the experiments, the primary investigator of this study was always present and most times there were one or two research assistants present as well.

Experiment 1: Eye-tracking

To test when individuals notice and pay attention to TADs we decided to rely on eye-tracking. Eye fixations are used in several studies as a measure of attention (Lee & Ahn, 2012; Pieters, Wedel, & Batra, 2010; Pieters et al., 2007) and eye fixations have proven to be more reliable measures of attention than participants' self-reported answers given on surveys (Duchowski, 2007; Russo, 1978). We used Tobii Studio 3.3.1 software and the Tobii 60XL eye-tracker.

The eye-tracker uses infrared corneal reflection. It consists of a monitor with a built-in camera, hidden in a black surface so as not to distract participants. At the beginning of the experiment it is necessary to calibrate each participant's eye-movements to adjust for individual differences. The primary researcher or a research assistant would assist participants during the calibration, to make sure the eye-tracker was calibrated properly. During the calibration, participants are aware of the fact that their eye-movements are being recorded, however other than that the recordings are non-intrusive. The technology is such that a participant does not need to sit perfectly still for the eye-tracking to be accurate, and head movements slower than 10 cm/s are allowed. Figure 2 is a heatmap that illustrates the gaze data captured with the eye-tracker on one of the images used in the experiment. In the figure on the left is the original image and on the right the image with the heatmap, red indicates that more attention was directed towards that area.

Figure 2. Experiment 1: Heat map of gaze data of one of the images used in the experiment.

The dependent variables in Experiment 1 are *attention*, *noticed*, and *noticed in first image*. The first measure, *attention*, measures the total time in seconds spent fixated on the TAD and hence measures the total attention paid to the TAD. The second measure, *noticed,* is a binary variable that takes a value of 1 if the TAD was noticed by the participant at least once and 0 otherwise. The third measure, *noticed in first image* is a binary variable that takes a value of 1 if a subject noticed a TAD in the first image of the treatment, and 0 otherwise. These are commonly used measures to gauge attention (e.g., Pieters et al., 2002; Pieters et al., 2007; Reutskaja, Nagel, Camerer, & Rangel, 2011). We used a within-between subject design, meaning that every participant was shown several treatments. This made it possible to compare an individual's outcomes in each treatment with each other, and with those of other participants. To control for order effects, i.e. the order of assignment to treatments affecting the outcomes of interest, we randomized the treatment assignment at the individual level. Hence, any two subjects had equal chances of being assigned to some treatment at the outset.

We used pictures of four fictional organizations: *Mon Ami*, a chocolate and sweets shop, *The Geek*, a software and hardware retailer, *Health Care Center*, a provider of various health care services, and *Block Design*, a store offering design products. In the control condition we did not include a TAD. In treatment 1 we included a TAD referring to the past, in treatment 2 we included a TAD referring to the present, and in treatment 3 we included a TAD referring to the future. Furthermore, we included a condition in which the image was cluttered (treatment 4). For an impression of the different conditions for one of the organizations *Block Design*, see figure 3. The treatments for the other organizations are available in Appendix B. A participant would be shown images of all four organizations, but under different treatments. For instance, *Block Design* past, *Health Care Center* present, *Mon Ami* control, and *The Geek* future. In addition, participants were asked simple questions to prime them to look at the pictures (e.g., "Do you think you can find a dentist here?") answered with "yes," "no," or "maybe". These questions were very general and a TAD would not be needed to answer the question. Hence, it provides a more stringent condition under which TADs receive attention and/or are noticed.

Each organization was displayed four times. In the first instance we showed the picture for ten seconds, each subsequent showing lasting for six seconds. In a pre-test, participants informed us that showing each picture four times ten seconds was too long, and six seconds on subsequent viewings seemed optimal - allowing enough time to read the accompanying question and look at the image while preventing participants from becoming bored. We also included questions on participants' age and gender.

Control *Treatment 1: Past* *Treatment 2: Present*

Treatment 3: Future *Treatment 4: Clutter*

Figure 3. Example of treatments for Block Design (Experiment 1).

Experiment 2: Survey

Whereas in Experiment 1 we test the often taken for granted assumption that individuals notice and pay attention to TADs, in Experiment 2 we measure the effects of TADs on participants' perception of organizations. We measure the perception of the organization with the corporate character scale that uses a 5-point Likert scale (Davies et al., 2004). Specifically, we focus on the individual's assessment of the *organizational quality, excitement,* and *ambition*. *Organizational quality* is a direct measure of the perceived ability of the organization to deliver consistent quality. *Organizational excitement* measures the perception of the organization as being novel, innovative, and exciting. *Organizational ambition* measures the individual's assessment of the extent to which the organization is ambitious, oriented towards achievement, and a leader in its field.

As in Experiment 1, we created a within-between subject design. Participants were shown logos of four fictional organizations, *Mon Ami*, *The Geek*, *Health Care Center*, and *Block Design*. In the control condition the logo did not include a TAD, in treatment 1 it included a TAD referring to the past, in treatment 2 a TAD referring to the present, and in treatment 3 a TAD referring to the future. See Figure 4 for an example of the different treatments for one of the organizations, *The Geek*, to get an impression of the treatments. The treatments of the other organizations are available in Appendix C. The logo-treatment

combinations were randomly presented to the participants. We created the experiment using Qualtrics, allowing for automatic randomization. Each participant was presented with four different logos, belonging to the different fictional organizations. For instance, an individual would see *The Geek* present, *Health Care Center* control, *Block Design* past, and *Mon Ami* future. After viewing a logo, the participant was asked to answer the questions on the corporate character scale. In addition, we asked participants questions about their age and gender. We also included attention checks, to verify that the participants were paying attention and answering questions seriously.

Figure 4. Example of treatments for The Geek (Experiment 2).

RESULTS

Experiment 1: Eye-tracking

Table 1 presents the descriptive statistics and the pairwise correlations between variables for the data of Experiment 1. Of the 101 participants, 60 were female and 41 were male. The average age of the participants is 21.13 which is to be expected considering they are university students. The variables under the heading 'experiment conditions' represent the treatments: *control*, *TADs* (i.e., past, present, and future TADs) and *clutter*.

	Mean	SD	1	2	3	4	5	6	7	8
Participant descriptives										
1. Gender	0.59	0.49	1.00							
2. Age	21.13	2.17	0.05[a]	1.00						
Experiment conditions										
3. Control	0.25	0.43	-0.03	0.02[a]	1.00					
4. TAD	0.57	0.50	-0.02	-0.01[a]	-0.66[*]	1.00				
5. Clutter	0.18	0.38	0.04	-0.03[a]	-0.27[*]	-0.54[*]	1.00			
Dependent variables										
6. Attention	0.60	0.94	0.03[a]	0.01	-0.14[a*]	0.19[a*]	-0.06[a]	1.00		
7. Noticed	0.62	0.49	-0.01	-0.03[a]	-0.23[*]	0.12[*]	0.15[*]	0.51[a*]	1.00	
8. Noticed in first image	0.47	0.50	-0.04	0.03[a]	-0.26[*]	0.10	0.20[*]	0.54[a*]	0.74[*]	1.00

Table 1. Experiment 1: Descriptives and pairwise correlations.
*Note: n = 101, total number of observations = 303, * = p<0.10, [a]=point-biserial correlation.*

Hypothesis 1 proposed that TADs are likely to receive attention. To test this hypothesis, we compared effects of the treatments with a TAD (past, present, or future) with the control group on *attention*, the results of the regression are reported in table 2. *Attention* captures the total time in seconds of eye fixation on the TAD, over multiple viewings. Each treatment is shown four times, or 28 seconds in total. The results allow us to conclude whether TADs catch the attention of individuals, rather than individuals having a preference to look at that part of the image and screen by mere coincidence. We also performed a post-hoc Wald test to test whether the coefficients of TAD is significantly different from the control group.

R^2:			**Number of obs.**		239
Within = 0.000			**Number of groups**		99
Between = 0.313			**Obs. Per group**		
Overall = 0.035			Min		1
			Avg		2.4
			Max		4
					Wald $\chi^2(1) = 8.55$
					Prob > χ^2 = 0.004
Attention	**Coefficient**	**Standard error**	**z**	**P-value**	**95% confidence interval**
TAD	0.404	0.138	2.92	0.003	(0.133;0.674)
constant	0.370	0.115	3.28	0.001	(0.148;0.594)

Table 2. Experiment 1: Regression results of TAD on attention.
Note: $\sigma_u = 0$, $\sigma_e = 0.977$, $\rho = 0$. Total number of observations excludes the clutter treatment.

According to the results in table 2 we can conclude that the area of interest in the visual gains significantly more attention when a TAD is included (χ^2=8.55, Pr> χ^2=0.004). That means, that it is not by mere coincidence that individuals look at the specific area, but they specifically pay attention to TADs. Our results are corroborated by the non-parametric Friedman test determining a statistically significant difference between the means of *attention*

between the different treatments. Results showed that the type of TAD used lead to statistically significant differences in attention paid to the area of attention (Q(1)=10.041, p=0.002). Hence, we find support for Hypothesis 1.

Hypothesis 2a proposed that a TAD receives less attention if the overall image is cluttered with other items, increasing the competition for an individual's attention. The results of the regression are reported in table 3. We also performed a post-hoc Wald test to test whether the coefficient of the clutter treatment is significantly different from the treatments that are not cluttered but do include a TAD. The coefficient of clutter is not significant at a level smaller than 10%, likewise the post-hoc Wald test does not provide support for our hypothesis (χ^2=2.69, Pr> χ^2=0.101). Hence our hypothesis that a TAD in a cluttered image receives less attention is not supported.

R^2:			**Number of obs.**		226
Within = 0.030			**Number of groups**		84
Between = 0.021			**Obs. Per group**		
Overall = 0.012			Min		1
			Avg		2.7
			Max		4
					Wald $\chi^2(1)$ = 2.69
					Prob > χ^2 = 0.101
Attention	**coefficient**	**Standard error**	**z**	**P-value**	**95% confidence interval**
clutter	-0.248	0.151	-1.64	0.101	(-0.544;0.048)
constant	0.738	0.073	10.07	0.000	(0.594;0.8881)

Table 3. Experiment 1: Regression results of clutter on attention.
Note: σ_u = 0.000 σ_e = 0.960 ρ = 0.000. Number of observations excludes control treatment.

In Hypothesis 2b we argued that clutter leads to a higher likelihood of a TAD being noticed, even though the total amount of attention directed to a TAD was expected to decrease in a cluttered image. To test this hypothesis, we created two models: (1) to test the likelihood for the TAD of being noticed overall, and (2) to be noticed in the first image the participant viewed of the treatment. The results are reported in tables 4a and 4b. We decided to include both models, as the model in table 4b provides a more stringent test of our hypothesis. In table 4a, we measure whether the TAD has been noticed at least once across the multiple viewings (28 seconds) of the image. Although 28 seconds is still relatively short, it does increase the likelihood that a TAD is noticed because there is not much more to look at. Hence, in table 4b we measure whether the TAD has been noticed in the first viewing of the mage (10 seconds), which is likely more representative of day-to-day situations.

Log-likelihood = -138.658			**Number of obs.**		226
			Number of groups		84
			Obs. Per group		
			Min		1
			Avg		2.7
			Max		4
					Wald $\chi^2(1) = 2.68$
					Prob > χ^2 = 0.102
Noticed	**coefficient**	**Standard error**	**z**	**P-value**	**95% confidence interval**
clutter	0.641	0.392	1.64	0.102	(-0.127;1.409)
constant	0.724	0.203	3.56	0.000	(0.326;1.123)
Ln σ^2_u	-0.498	0.812			(-2.090;1.094)
σ_u	0.779	0.317			(0.352;1.728)
ρ	0.156	0.107			(0.036;0.476)

Table 4a. Experiment 1: Logit regression of clutter on noticed.

LR test of ρ=0: $\chi^2(01)$ = 2.71 Prob> χ^2=0.050

Log-likelihood = -180.515			**Number of obs.**		226
			Number of groups		84
			Obs. Per group		
			Min		1
			Avg		2.7
			Max		4
					Wald $\chi^2(1) = 5.22$
					Prob > χ^2 = 0.0223
Noticed in first image	**coefficient**	**Standard error**	**z**	**P-value**	**95% confidence interval**
clutter	0.777	0.340	2.28	0.022	(0.110;1.444)
constant	-0.010	0.161	-0.06	0.953	(-0.328;0.307)
Ln σ^2_u	-1.911	2.147			(-6.118;2.230)
σ_u	0.385	0.413			(0.047;3.153)
ρ	0.043	0.088			(0.001;0.751)

Table 4b. Experiment 1: Logit regression of clutter on noticed in first image.

LR test of ρ=0: $\chi^2(01)$ = 0.26 Prob> χ^2=0.304

The results in table 4a show that the effect of clutter does not have a significant effect on the likelihood of a TAD being noticed in an image ($\chi^2(1)$= 2.68, Pr> χ^2=0.102). This is corroborated by the t-test on the equality of means (t(224)= -1.649, Pr>|t|=0.101). However, the likelihood of a TAD being noticed in the first image is significantly higher in the clutter treatment than the non-clutter treatments, according to table 4b ($\chi^2(1)$= 5.22, Pr> χ^2=0.022). This result is also supported by the t-test of the equality of means (t(224)= -2.346, Pr>|t|=0.020). Hence, we find partial support for hypothesis 2b. Although we find that clutter increases the likelihood of noticing a TAD, the effect seems to dissipate with repeated exposure to the cluttered environment and the TAD.

Experiment 2: Survey

Table 5 provides the descriptive statistics and pairwise correlations for Experiment 2. We excluded the results of 10 students as they failed one or more attention checks in the experiment. The average age of the participants is 21.05 years as, in line with the population of university students. In Experiment 2 we had more women than men participating in the experiment (115 women, 77 men).

We tested hypotheses 3a, b, and c using ordered probit regressions taking into account that a subject participated in different treatments. The advantage of regressions is that they allow for multiple testing, central to the analysis of these data, and that more power is preserved for statistical inference since the analysis of the data not only considers comparisons across treatments but also across organizations. The results are available in tables 6a, b, and c.

The coefficient of *past*, in table 6a, supports hypothesis 3a, that a past TAD has a positive effect on individuals perception of quality of the organization ($\chi^2(1)= 14.75$, Pr> $\chi^2=0.000$). This result is also supported by the Friedman test on the equality of means ($Q(1)=14.995$, $p=0.000$). However, as we can see in the table a future TAD also has a positive and significant effect on the perception of quality and this effect cannot be concluded to be significantly different from the effect of a past TAD ($\chi^2(1)= 0.84$, Pr> $\chi^2=0.359$).

In table 6b, the coefficient of *present* supports hypothesis 3b as the coefficient is positive and significant at the 10% level. This result indicates that the use of a present TAD increases individual's perception how exciting the organization is ($\chi^2(1)= 3.71$, Pr> $\chi^2=0.054$). However, this effect is not supported by the more stringent Friedman test ($Q(1)=1.531$, $p=0.216$). *Future* also has a positive and significant effect, and we cannot conclude that there is a statistically significant difference between the coefficients of *future* and *present* ($\chi^2(1)= 1.30$, Pr> $\chi^2=0.253$).

Besides increasing the perception of organizational quality and excitement, a future TAD increases the perceptions of how ambitious the organization is, as hypothesized. The coefficient of *future* in table 6c is positive and significant ($\chi^2(1)= 20.10$, Pr> $\chi^2=0.000$). This result is supported by the Friedman test ($Q(1)=15.561$, $p=0.000$). The coefficient is also significantly different from those of *past* ($\chi^2(1)= 10.48$, Pr> $\chi^2=0.001$) and *present* ($\chi^2(1)= 7.43$, Pr> $\chi^2=0.006$). The latter also has a positive and significant effect on the perceptions of the organization's ambition, but this effect is smaller than the effect of a future TAD.

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Participant descriptives																	
1. Gender	0.60	0.49	1.00														
2. Age	21.05	2.49	-0.10[a*]	1.00													
Experiment conditions																	
3. Control	0.25	0.43	-0.10	0.00[a]	1.00												
4. Past	0.25	0.43	-0.00	0.00[a]	-0.33*	1.00											
5. Present	0.25	0.43	-0.00	0.00[a]	-0.33*	-0.33*	1.00										
6. Future	0.25	0.43	-0.00	0.00[a]	-0.33*	-0.33*	-0.33*	1.00									
7. The Geek * past	0.06	0.24	-0.05	0.02[a]	-0.15*	0.44*	-0.15*	-0.15*	1.00								
8. The Geek * present	0.06	0.24	0.05	-0.03[a]	-0.15*	-0.15*	0.44*	-0.15*	-0.07*	1.00							
9. The Geek * future	0.06	0.24	-0.01	0.01[a]	-0.15*	-0.15*	-0.15*	0.45*	-0.07*	-0.07*	1.00						
10. Mon Ami * past	0.06	0.24	0.02	0.01[a]	-0.15*	0.44*	-0.15*	-0.15*	-0.07*	-0.07*	-0.07*	1.00					
11. Mon Ami * present	0.06	0.24	-0.02	0.01[a]	-0.15*	-0.15*	0.45*	-0.15*	-0.07*	-0.07*	-0.07*	-0.07*	1.00				
12. Mon Ami * future	0.06	0.24	0.05	-0.00[a]	-0.15*	-0.15*	-0.15*	0.44*	-0.06*	-0.06*	-0.07*	-0.07*	-0.07*	1.00			
Dependent variables																	
13. Quality	3.16	0.97	-0.01[c]	-0.01[d]	-0.11[c*]	0.18[c*]	-0.19[c*]	0.12[c*]	-0.08[c]	-0.24[c*]	-0.04[c]	0.52[c*]	0.12[c]	0.39[c*]	1.00		
14. Excitement	3.09	1.06	0.03[c]	-0.03[d]	-0.11[c*]	-0.07[c]	0.07[c]	0.11[c*]	0.26[c*]	031[c*]	0.41[c*]	0.03[c]	0.06[c]	-0.04[c]	0.21[b*]	1.00	
15. Ambition	3.55	0.98	0.08[c*]	-0.06[d*]	-0.14[c*]	-0.05[c]	-0.00[c]	0.19[c*]	0.16[c*]	0.19[c*]	0.33[c*]	-0.01[c]	-0.12[c]	-0.06[c]	0.19[b*]	0.45[b*]	1.00

Table 5. Experiment 2: Descriptives and pairwise correlations.

*Note: n = 192, total number of observations = 768, * = p<0.10, [a]=Point-biserial correlation, [b]=Spearman rho, [c]=Rank-biserial correlation, [d]= Kendall's rank correlation.*

Log-likelihood = -1044.44			**Number of obs.**		768
			Number of groups		192
			Obs. Per group		
			Min		4
			Avg		4.0
			Max		4
					Wald $\chi^2(3) = 32.90$
					Prob > χ^2 = 0.000
Quality	**coefficient**	**Standard error**	**z**	**P-value**	**95% confidence interval**
past	0.416	0.108	3.84	0.000	(0.204;0.629)
present	-0.125	0.107	-1.16	0.246	(-0.335;0.086)
future	0.318	0.108	2.94	0.003	(0.106;0.529)
cut1	-1.611	-.107	-15.03	0.000	(-1.822;-1.401)
cut2	-0.578	0.083	-6.98	0.000	(-0.740;-0.416)
cut3	0.502	0.083	6.05	0.000	(0.340;0.665)
cut4	1.629	0.100	16.24	0.000	(1.432;1.826)
σ^2_u	0.023	0.036			(0.001;0.487)

Table 6a. Experiment 2: Ordered Probit regression of TADs on perception of organizational quality.
LR test vs. oprobit model: $\chi^2(01) = 0.45$ Prob> χ^2=0.251

Log-likelihood = -1075.629			**Number of obs.**		768
			Number of groups		192
			Obs. Per group		
			Min		4
			Avg		4.0
			Max		4
					Wald $\chi^2(3) = 12.05$
					Prob > χ^2 = 0.007
Excitement	**coefficient**	**Standard error**	**z**	**P-value**	**95% confidence interval**
past	0.040	0.108	0.37	0.712	(-0.171;0.251)
present	0.208	0.108	1.93	0.054	(-0.004;0.420)
future	0.331	0.108	3.06	0.002	(0.119;0.544)
cut1	-1.422	0.099	-14.31	0.000	(-1.617;-1.228)
cut2	-0.291	0.082	-3.57	0.000	(-0.451;-0.131)
cut3	0.337	0.082	4.11	0.000	(0.176;0.498)
cut4	1.721	0.104	16.49	0.000	(1.517;1.926)
σ^2_u	0.025	0.036			(0.001;0.489)

Table 6b. Experiment 2: Ordered Probit regression of TADs on perception of organizational excitement.
LR test vs. oprobit model: $\chi^2(01) = 0.52$ Prob> χ^2=0.234

Log-likelihood = -1034.579			**Number of obs.**		768
			Number of groups		192
			Obs. Per group		
			Min		4
			Avg		4.0
			Max		4
					Wald $\chi^2(3) = 21.28$
					Prob > χ^2 = 0.000
Ambition	**coefficient**	**Standard error**	**z**	**P-value**	**95% confidence interval**
past	0.138	0.108	1.28	0.201	(-0.074;0.350)
present	0.194	0.108	1.79	0.074	(-0.019;0.406)
future	0.493	0.110	4.48	0.000	(0.277;0.708)
cut1	-2.023	0.137	-14.81	0.000	(-2.291;-1.755)
cut2	-0.833	0.088	-9.44	0.000	(-1.007;-0.661)
cut3	0.021	0.083	0.25	0.805	(-0.142;0.183)
cut4	1.253	0.094	13.32	0.000	(1.069;1.438)
σ^2_u	0.087	0.044			(0.032;0.235)

Table 6c. Experiment 2: Ordered Probit regression of TADs on perception of organizational ambition.
LR test vs. oprobit model: $\chi^2(01) = 5.31$ Prob> χ^2=0.011

In Hypothesis 4 we argued that using a TAD that is not aligned with the prevailing expectations of the use of TADs in the focal organization's organizational field, will negatively affect audiences' perception of the organization. For *Mon Ami* we would expect a negative effect if combined with a TAD referring to the present or future, given that the chocolate industry is regarded as highly traditional (Cassiday, 2012; Terrio, 2000). For *The Geek* we expected a negative effect when using a TAD referring to the past, because of the rapid rates of change and innovation in the industry of consumer electronics (Christensen, Olesen, & Kjær, 2005). For *Health Care Center* and *Block Design* we refrain from making a claim on what TAD would be expected in their fields, as expectations regarding the use of TADs in these fields would be unclear. For instance, in the health care sector a properly and traditionally trained doctor would be preferred, however he or she should be aware of and applying state of the art medicine.

Tables 7a-c show the results of the regressions that include the interaction terms with the fictional organization *Mon Ami*. Tables 8a-c show the results of the regressions with the interaction terms with *The Geek*. As we can observe from table 7a, Mon Ami does not receive a penalty in the perception of its quality for using a present ($\chi^2(1)= 1.18$, Pr> χ^2=0.276) or future TAD ($\chi^2(1)= 0.69$, Pr> χ^2=0.406). We do observe a penalty in the perception of organizational excitement when Mon Ami uses a future TAD ($\chi^2(1)= 5.29$, Pr> χ^2=0.021), but not when a present TAD is included ($\chi^2(1)= 0.84$, Pr> χ^2=0.360) (table 7b). However, the effect of a future TAD does not hold in the Friedman test (Q(1)=0.202, p=0.653). Mon Ami also does not seem to receive a penalty for the use of present ($\chi^2(1)=$

0.14, Pr> χ^2=0.710) or future (χ^2(1)= 2.64, Pr> χ^2=0.104) TADs on the perception of its ambition.

The Geek also does not receive a penalty on the perception of its quality for using a TAD referring to the past (χ^2(1)= 0.65, Pr> χ^2=0.421). Neither do we observe a lower evaluation of its excitement when a past TAD is included (χ^2(1)= 0.53, Pr> χ^2=0.468). In the model of table 8c, we do not observe support for our hypothesis that a past TAD would lead to lower evaluations on the organization's ambition (χ^2(1)= 0.15, Pr> χ^2=0.699). Hence, hypothesis 5 is not supported.

Log-likelihood = -998.345			**Number of obs.**		768
			Number of groups		192
			Obs. Per group		
			Min		4
			Avg		4.0
			Max		4
					Wald χ^2(7) = 120.76
					Prob > χ^2 = 0.000
Quality	**coefficient**	**Standard error**	**z**	**P-value**	**95% confidence interval**
past	0.455	0.127	3.58	0.000	(0.206;0.704)
present	-0.067	0.126	-0.53	0.598	(-0.314;0.181)
future	0.410	0.126	3.25	0.001	(0.162;0.658)
Mon Ami	1.001	0.184	5.43	0.000	(0.640;1.361)
Mon Ami * past	0.024	0.262	0.09	0.928	(-0.490;0.537)
Mon Ami * present	-0.281	0.259	-1.09	0.276	(-0.788;0.225)
Mon Ami * future	-0.218	0.262	-0.83	0.406	(-0.732;0.296)
cut1	-1.463	0.118	-12.44	0.000	(-1.694;-1.233)
cut2	-0.388	0.096	-4.06	0.000	(-0.576;-0.201)
cut3	0.786	0.099	7.96	0.000	(0.592;0.979)
cut4	2.058	0.122	16.88	0.000	(1.819;2.297)
σ^2_u	0.070	0.042			(0.022;0.227)

Table 7a. Experiment 2: Ordered Probit regression of TADs on perception of organizational quality including the interaction with Mon Ami.

LR test vs. oprobit model: χ^2(01) = 3.61 Prob> χ^2=0.0287

Log-likelihood = -1072.376			**Number of obs.**		768
			Number of groups		192
			Obs. Per group		
			Min		4
			Avg		4.0
			Max		4
					Wald $\chi^2(7) = 18.49$
					Prob > χ^2 = 0.010
Excitement	**coefficient**	**Standard error**	**z**	**P-value**	**95% confidence interval**
past	0.057	0.125	0.45	0.650	(-0.188;0.302)
present	0.267	0.126	2.13	0.033	(0.021;0.514)
future	0.476	0.126	3.79	0.000	(0.230;0.722)
Mon Ami	0.252	0.176	1.43	0.154	(-0.094;0.579)
Mon Ami * past	-0.061	0.251	-0.25	0.806	(-0.553;0.430)
Mon Ami * present	-0.229	0.251	-0.91	0.360	(-0.720;0.262)
Mon Ami * future	-0.582	0.253	-2.30	0.021	(-1.079;-0.086)
cut1	-1.354	0.108	-12.61	0.000	(-1.575;-1.152)
cut2	-0.227	0.093	-2.44	0.015	(-0.410;-0.045)
cut3	0.403	0.094	4.29	0.000	(0.219;0.588)
cut4	1.790	0.114	15.66	0.000	(1.566;2.014)
σ^2_u	0.021	0.036			(0.001;0.562)

Table 7b. Experiment 2: Ordered Probit regression of TADs on perception of organizational excitement including the interaction with Mon Ami.

LR test vs. oprobit model: $\chi^2(01) = 0.39$ Prob> χ^2=0.2651

Log-likelihood = -1072.376			**Number of obs.**		768
			Number of groups		192
			Obs. Per group		
			Min		4
			Avg		4.0
			Max		4
					Wald $\chi^2(7) = 18.49$
					Prob > χ^2 = 0.010
Ambition	**coefficient**	**Standard error**	**z**	**P-value**	**95% confidence interval**
past	0.087	0.126	0.69	0.489	(-0.160;0.335)
present	0.219	0.127	1.73	0.084	(-0.030;0.469)
future	0.597	0.128	4.65	0.000	(-0.479;0.226)
Mon Ami	-0.127	0.180	-0.70	0.481	(-0.479;0.226)
Mon Ami * past	0.202	0.258	0.78	0.434	(-0.304;0.709)
Mon Ami * present	-0.096	0.258	-0.37	0.710	(-0.601;0.409)
Mon Ami * future	-0.425	0.262	-1.62	0.104	(-0.938;0.088)
cut1	-2.068	0.144	-14.32	0.000	(-2.351;-1.785)
cut2	-0.874	0.100	-8.72	0.000	(-1.070;-0.677)
cut3	-0.012	0.096	-0.11	0.910	(-0.198;0.176)
cut4	1.230	0.104	11.79	0.000	(1.026;1.4435)
σ^2_u	0.085	0.044			(0.031;0.234)

Table 7c. Experiment 2: Ordered Probit regression of TADs on perception of organizational ambition including the interaction with Mon Ami.

LR test vs. oprobit model: $\chi^2(01) = 5.07$ Prob> χ^2=0.012

Log-likelihood = -1034.912			**Number of obs.**		**768**
			Number of groups		**192**
			Obs. Per group		
			Min		**4**
			Avg		**4.0**
			Max		**4**
					Wald $\chi^2(7) = 51.53$
					Prob > χ^2 = 0.000
Quality	**coefficient**	**Standard error**	**z**	**P-value**	**95% confidence interval**
past	0.471	0.126	3.72	0.000	(0.223;0.718)
present	-0.176	0.125	-1.41	0.160	(-0.421;0.069)
future	0.311	0.126	2.47	0.013	(0.064;0.558)
The Geek	-0.369	0.177	-2.08	0.037	(-0.715;-0.022)
The Geek * past	-0.204	0.254	-0.81	0.421	(-0.702;0.293)
The Geek * present	0.182	0.253	0.72	0.471	(-0.313;0.678)
The Geek * future	0.047	0.251	0.19	0.853	(-0.446;0.539)
cut1	-1.730	0.118	-14.66	0.000	(-1.962;-1.499)
cut2	-0.686	0.096	-7.17	0.000	(-0.873;-0.498)
cut3	0.417	0.095	4.39	0.910	(0.231;0.603)
cut4	1.568	0.110	14.25	0.000	(1.353;1.784)
σ^2_u	0.033	0.037			(0.004;0.295)

Table 8a. Experiment 2: Ordered Probit regression of TADs on perception of organizational quality including the interaction with The Geek.

LR test vs. oprobit model: $\chi^2(01) = 0.92$ Prob> χ^2=0.168

Log-likelihood = -1040.608			**Number of obs.**		768
			Number of groups		192
			Obs. Per group		
			Min		4
			Avg		4.0
			Max		4
					Wald $\chi^2(7) = 80.06$
					Prob > χ^2 = 0.000
Excitement	**coefficient**	**Standard error**	**z**	**P-value**	**95% confidence interval**
past	0.003	0.126	0.02	0.981	(-0.244;0.250)
present	0.240	0.126	1.90	0.057	(-0.007;0.488)
future	0.302	0.127	2.38	0.017	(0.053;0.550)
The Geek	0.672	0.182	3.68	0.000	(0.314;1.029)
The Geek * past	0.190	0.262	0.73	0.468	(-0.324;0.704)
The Geek * present	-0.044	0.261	-0.17	0.865	(-0.556;0.467)
The Geek * future	0.217	0.260	0.83	0.405	(-0.293;0.727)
cut1	-1.340	0.111	-12.11	0.000	(-1.557;-1.123)
cut2	-0.147	0.095	-1.55	0.121	(-0.334;0.039)
cut3	0.524	0.097	5.42	0.000	(0.335;0.713)
cut4	2.029	0.123	16.56	0.000	(1.789;2.269)
σ^2_u	0.067	0.042			(0.019;0.230)

Table 8b. Experiment 2: Ordered Probit regression of TADs on perception of organizational excitement including the interaction with The Geek.

LR test vs. oprobit model: $\chi^2(01) = 3.23$ Prob> χ^2=0.036

Log-likelihood = -1017.993			**Number of obs.**		768
			Number of groups		192
			Obs. Per group		
			Min		4
			Avg		4.0
			Max		4
					Wald $\chi^2(7) = 53.67$
					Prob > χ^2 = 0.000
Ambition	**coefficient**	**Standard error**	**z**	**P-value**	**95% confidence interval**
past	0.171	0.126	1.35	0.176	(-0.077;0.418)
present	0.217	0.127	1.71	0.087	(-0.031;0.465)
future	0.524	0.129	4.07	0.000	(0.272;0.776)
The Geek	0.577	0.185	3.12	0.002	(0.214;0.940)
The Geek * past	-0.102	0.265	-0.39	0.699	(-0.622;0.417)
The Geek * present	-0.053	0.266	-0.20	0.843	(-0.574;0.469)
The Geek * future	-0.067	0.266	-0.25	0.801	(-0.590;0.455)
cut1	-1.931	0.145	-13.34	0.000	(-2.216;-1.648)
cut2	-0.716	0.100	-7.19	0.000	(-0.912;-0.521)
cut3	0.163	0.096	1.70	0.089	(-0.025;0.350)
cut4	1.441	0.109	13.26	0.000	(1.228;1.655)
σ^2_u	0.067	0.042			(0.019;0.230)

Table 8c. Experiment 2: Ordered Probit regression of TADs on perception of organizational ambition including the interaction with The Geek

LR test vs. oprobit model: $\chi^2(01) = 7.88$ Prob> χ^2=0.003

DISCUSSION & CONCLUSION

Discussion

The findings of Experiment 1 show that individuals pay considerably more attention to an area of interest with a TAD than the same area without a TAD. This corroborates the implicit assumption – that symbols such as TADs are noticed - made by prior research on organizations' use of symbols (Rao, 1994; Schnackenberg et al., 2019). We did not find support for hypothesis 2a, that a TAD surrounded by clutter would receive less attention than a TAD in a non-cluttered image. We did find support for hypothesis 2b; clutter increases the likelihood of a TAD being noticed at least once. Indeed, we found that in the first viewing of the image, subjects in the clutter treatment were more likely to observe a TAD. This finding is supportive of our argument that clutter stimulates the brain to become more active and efficient, in line with cognitive load theory (Jaeggi et al., 2007; Paas et al., 2004). However, when exposed to the image repeatedly, this effect faded. All in all, our findings from Experiment 1 show when TADs are noticed and paid attention to. Whereas past research has assumed that symbols and TADs are meaningful carriers of information that are interpreted by audience members, our findings indicate that the likelihood of TADs being noticed and paid attention to – the prerequisite for it to affect audiences' behavior, judgment, and decision

making – depends on the environment in which it is used, and whether an individual is exposed to the symbol once or repeatedly.

The findings of Experiment 2 indicate that any TAD positively affects an audience member's perception of the organization. However, depending on the TAD, different dimensions of an individual's perception of the organization are affected. In line with hypothesis 3a, TADs referring to the past increase the perception of quality of the organization. Supporting hypothesis 3b, a present TAD is associated with a perception of a more exciting organization. In support of hypothesis 3c, a future TAD is associated with a perception of a more ambitious organization. Noteworthy, is that a future TAD is also associated with perceiving the organization as having higher quality and being more exciting. A present TAD also positively affects the perceptions of the organization's ambition, however to a lesser extent than a future TAD.

We did not find support for our final hypothesis, that a TAD that is not aligned with the general values and identity of the organization's field will lead to less positive evaluations of the organization. The lack of support for our hypothesis can be caused by our subject pool. Because our subjects were university students, they were also relatively young. Consequently, they might value time references differently than for instance older generations. Furthermore, a reference to a different time period than is common in the organizational field might not be perceived by our subjects to be a serious (enough) transgression. Hence, in future research the effects – but also when they are noticed – should be tested in a more diverse subject pool, with individuals with different temporal orientations (see for instance Zimbardo & Boyd, 1999).

Contributions

We make several contributions to the literature on organizations' use of symbols and organizational history and temporality. First, previous research investigated a myriad of ways in which references to the past and evoking history stand to benefit organizations, increasing perceptions of their legitimacy, reliability, innovativeness, etc. (e.g., Burghausen & Balmer, 2014a, 2014b; Hatch & Schultz, 2017; Hudson & Balmer, 2013; Pecot & De Barnier, 2017; Pecot et al., 2018; Schultz et al., 2006; Suddaby et al., 2010; Urde et al., 2007). Indeed, we find that references to the past can increase perceptions of an organization's quality, but not the perceptions of how exciting and ambitious the organization is. The latter being more associated with novelty and newness, e.g. the present, or the future. We have expanded on the research on references to the past, by also looking at references to the present and future. We

argued that different organizational dimensions can be affected by different TADs and have shown that a future TAD enhances perceptions of quality, excitement, and ambition. Present TADs affect both perceptions of excitement and ambition, but not of quality. We show that the usage of present and future temporal anchoring devices is not negligible inasmuch as it can have a positive influence on the audience's perception of the organization.

Second, prior studies on organizational history and temporality have predominantly focused on internal organizational audiences and have overlooked the information asymmetry that affects external audiences in forming their perception of the organization. Our study contributes to the understanding of the effects of symbols on external audiences' perception of the organization. We theorize and test the conditions under which symbols are noticed and also their effects on the perceived competence, quality, and innovative capability of an organization. This is an important contribution, as previous studies made stringent assumptions about the effects of symbols and temporal references on external audiences.

Third, we empirically tested the assumption made in prior studies that symbols are noticed and taken into account by audience members. Our results show that the environment, and exposure determine whether symbols are noticed. Although we have not exhausted all the potential factors that can increase and decrease the likelihood that a symbol is noticed, we have shown clean empirical evidence of some determinants that affect attention to TADs. Noteworthy, is that a TAD that refers to the past, which seems to be the most commonly used TAD, is less likely to receive attention than its counterparts referring to the present or future. This is potentially caused by our subjects, but it also indicates that symbols are indeed noticed cannot be taken-for-granted.

Limitations & Future Research Directions

The limitations and findings of this study suggest several avenues for future research. Although the laboratory experiments allowed us to cleanly understand the effects of TADs and when attention is paid to them, a laboratory experiment is limited in its ability to represent reality. That is, participants were presented with static images of organizations or logos that resembled real organizations on a monitor. However, this environment did not allow us to study other factors that may influence visual attention, judgment, and decision making, such as noise, other information sources, movement, etc. Future research could investigate whether these factors affect visual attention, judgment, and decision making to symbols, for instance in a field study.

In addition, because of our sample, the generalizability of our findings should be considered. Although there is no reason to believe that the eye movement of university students will be different from other audiences, the interpretation of symbols and their perception may be different. For instance, it has been shown that older individuals tend to be more past oriented than relatively younger individuals (Kastenbaum, 1966; Nuttin, 1985; Zimbardo & Boyd, 1999), this could imply that older individuals may value references to the past more, and might therefore make a more positive evaluation of organizations that use TADs referring to the past. In addition, older individuals may be more inclined to pay attention to TADs evoking the past than university students. Future research should explore the effects of TADs – and symbols in general – and the contingencies under which they receive attention on a more representative sample.

Furthermore, in Experiment 2 we rely on short exposure to organizations' logos without any further information being given to the subjects. Although this setting was useful for showing that TADs affect audience members' perceptions of the organization when the organization is not familiar to the subjects, familiarity with an organization might affect the evaluation of the organization and the extent to which audience members rely on symbols (e.g., Pecot et al., 2018). Hence, future research could study the effects of TADs (and other symbols) on audience members' perceptions when audiences are familiar with the organization. This could be accomplished using our experimental design, the only difference being that organizations that are well known to the public are included or alternatively that the subjects get to know the fictional organizations by providing background information on each.

In addition, a limitation of our results is in the experiments itself and the still limited range of TADs we have studied. For instance, some TADs are use more characters than others, which could have resulted in more attention being paid to them, simply because they take longer to absorb. Some TADs might have also been more novel or original than more familiar TADs, such as past TADs. In future research also past TADs can be made more original (e.g., "before the beginning of times").

In conclusion, this paper integrates studies on organizations' use of symbols, organizational history and temporality and visual attention, to theorize and empirically test when TADs are noticed and what their effects are on individuals' perceptions of organizations. We outlined limitations in existing research and designed two sets of experiments addressing these limitations. Our results contribute to the literatures on organizations' use of symbols and organizational history and temporality by illustrating when

TADs are more likely to be noticed and what the different effects of TADs referring to past, present, or future are on audience members' perceptions of organizations. The findings indicate that TADs, if noticed, positively affect audience members' perceptions of organizations, as long as the organizations do not violate prevailing expectations on the use of TADs. With this study we have illustrated the potential effects of a phenomenon that is ubiquitously used yet overlooked in research, a phenomenon we refer to as TADs.

Appendix A: Instructions Experiments 1 and 2

Experiment 1:

Dear participant,
You are about to take part in an eye-tracking study. You're asked to look at pictures of organizations and answer some questions about these organizations. You're also asked some questions about your personal preferences and background.
There are no "right" or "wrong" answers, just fill in what you think fits best.
If you see a slide with only text, you can use left mouse click to precede to the next slide, once you finished reading. If you see a picture with a question, you need to wait 6-10 seconds and the next slide will pop-up automatically.
Before you can start the experiment, we need to calibrate the eye-tracker. You can leave your cubicle and call a research assistant to help you calibrate.
Thanks in advance for your participation.

Experiment 2:

Welcome to the research study!
We are interested in understanding individuals' perceptions of organizations. You will be presented with logos of 4 different organizations and asked to answer some questions about the organization. There are no "right" or "wrong" answers. Just fill in what you think fits best. Please be assured that your responses will be kept completely confidential and are used for academic purposes only.

The study should take you around 15 minutes to complete and you will receive a reward for your participation. Your participation in this research is voluntary. You have the right to withdraw at any point during the study, for any reason, and without any prejudice. If you would like to contact the Principal Investigator in the study to discuss this research, please e-mail [XXX]

By clicking the button below, you acknowledge that your participation in the study is voluntary, you are at least 18 years of age, and that you are aware that you may choose to terminate your participation in the study at any time and for any reason.

If you wish to be informed about the study's results you can fill in your email address at the end of the survey. Thank you for your participation.

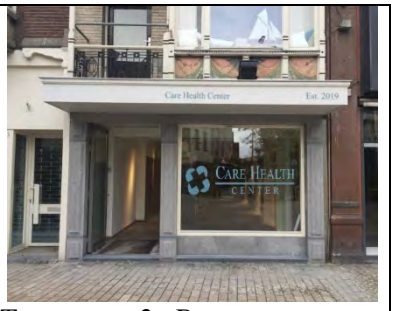
General questions:

What's your gender?
How old are you?

Appendix B: Treatments Experiment 1

Control

Treatment 1: Past



Treatment 2: Present

Treatment 3: Future

Treatment 4: Clutter

Control

Treatment 1: Past

Treatment 2: Present

Treatment 3: Future

Treatment 4: Clutter

 *Control*	 *Treatment 1: Past*	 *Treatment 2: Present*
 *Treatment 3: Future*	 *Treatment 4: Clutter*	

Appendix C: Treatments Experiment 2

 *Control*	 *Treatment 1: Past*
 *Treatment 2: Present*	 *Treatment 3: Future*
 *Control*	 *Treatment 1: Past*
 *Treatment 2: Present*	 *Treatment 3: Future*

Control

Treatment 1: Past

Treatment 2: Present

Treatment 3: Future

CONCLUSION

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In this dissertation I studied a phenomenon that has so far received scant attention, temporal anchoring devices. The study was driven by the observation that references to time seem to be ubiquitously used by organizations, spanning field, country, religious, and cultural boundaries. Organizations refer to years and dates of noteworthy events, often their founding, in their logos, products, vehicles, websites, merchandise, etc. Yet, scholars paid little direct attention to this practice, with some exceptions of studies that have focused on or made mention of historical references (e.g., Beck et al., 2016; Pecot & De Barnier, 2017; Pecot et al., 2018; Suddaby et al., 2010). As these studies, grounded in organizational and or corporate history, limited their efforts – rightfully so – to only one type of TAD and often one application of TADs, marketing, I embarked on a quest to explain the phenomenon of TADs more broadly utilizing various organization theories and perspectives. With this thesis I intended to explain and understand TADs both theoretically and empirically, at different levels of analysis, over time, and by using different methods. I hope to have established what TADs are, how and when they are used, what some possible effects of TADs are, and to have alluded to why TADs are being used – to answer the overarching research question 'how do TADs serve organizations' meaning making?'.

Overview

In the introduction chapter we introduced TADs as short references to time that are often accompanied by a descriptor. We conceptually explained TADs different types – TADs referring to the past, the present, and the future, contemplated some potential sources of inspiration for organizations to use TADs, and potential uses of TADs. We argued that TADs are a distinct and specific type of symbol, parsimonious carriers of meaning (Gagliardi, 1990; Pierce, 1980; Vaughn, 1995), that allow us to connect the almost universal institution of time reckoning as expressed by the Gregorian calendar with more micro level organizational practices. We emphasized that TADs represent much more than organizational age and can symbolize a plethora of meanings, valuable for both organizational members and external audiences.

A widespread view is that organizations use TADs to exhibit their old age thereby signaling stability or reliability, which may ultimately contribute to their legitimacy (Suddaby et al., 2010). Indeed, TADs referring to the past can be designed for this purpose. However, both for present and future TADs it becomes difficult to argue that the same mechanism applies. Furthermore, we argued that creating legitimacy is only one purpose of TADs, a notion that resurfaced in chapter 3. TADs can be used to visualize goals, to reinforce group boundaries, to signal authenticity, and to celebrate achievements, among others.

In chapter 2 we studied the use of symbolsmore generally by organizations belonging to three fields, health care, software, and organic food in Germany. These fields were chosen as initially we assumed that they would be highly distinct from one another. Health care is an old, highly institutionalized, professional field with its roots in science. Organic food is a younger field, associated with nature, ideology, and spirituality. Software is the youngest field, which focuses on technology, rapid innovation, and is not necessarily bound to a geographical location. Consequently, we did not expect to find overlaps and anticipated only very little similarities in their visual vocabularies and identities. After reconstructing the fields and collecting and analyzing the visual representations of the fields' members visual identities, we noticed connections between the organizations of the different fields, i.e. organizations in the interstitial space, and overlaps in the symbolic elements they use. Some symbolic elements are even used by organizations in all three fields. We argued that these stem from an embeddedness in a wider institutional environment, the German nation state and culture. One of the elements that is used in the three fields are TADs. This finding supports our general claim in the other chapters that TADs cross boundaries, in this case field boundaries. Some elements we found to be field specific, establishing field boundaries, based on the collective identity of field members and their shared meaning frameworks – in line with prior research (e.g., DiMaggio & Powell, 1983; Fligstein & McAdam, 2012; Glynn & Abzug, 2002; Wooten & Hoffman, 2008). These elements that are not shared with organizations in other fields, highlight that members of the field are more similar and homogenous, due to isomorphic pressures, compared to organizations that do not belong to the field. The most surprising and interesting finding in chapter 2 was that some elements cross field boundaries into another field. This is surprising, as prior research often assumed rigid and impermeable field boundaries. Some of these symbolic elements have a similar meaning in both fields, for instance the use of fonts, or references to awards won, we call these elements *symbolic bridges*. Other elements appear to be similar, but have different

meanings in different fields, for instance the use of family names, and we call these *false friends*.

The main contribution of chapter 2 is to the literature on inter-field connections (Boxenbaum & Battilana, 2005; Djelic & Ainamo, 2005; Eisenman & Simons, 2020; Evans & Kay, 2008; Furnari, 2016) and field boundaries (Fligstein & McAdam, 2012; Glynn & Abzug, 2002; Lamont & Molnár, 2002; Patvardhan et al., 2015; Zietsma & Lawrence, 2010). We showed how inter-field connections extend to the symbolic realm, beyond resource exchange and interdependency. We also found that field boundaries are not completely impermeable; some symbolic elements are shared by all organizations and derived from the wider institutional context, and some elements are shared by organizations in two fields. Still, organizational fields have their own distinct and unique collective identity as the result of the different recombination of elements. Furthermore, it is an empirical investigation of the conceptualization of a field based on shared meaning (Scott, 1995b), rather than ontological properties (Oberg, Korff Valeska, et al., 2017). While at the same time we captured the relational structure of the field, based on web connectivity.

In chapter 3 we went back in time to study the use of TADs over the (nearly) 200-years lifespans of three chocolate producers, Halloren, Suchard, and Cadbury. We were interested in how and when they use, discontinue the use, or abstain from the use of TADs. The organizations are similar in the sense that they all started out as small shops, are based in Protestant regions of Europe, faced several changes in ownership and leadership, had difficulties accessing raw materials during and after the two world wars, and are still operating to date – albeit Cadbury and Suchard not as independent organizations. The organizations also exhibit considerable differences. Halloren was acquired by an employee, instead of a family member, early on in its existence. Furthermore, the owners encountered hardships during the Nazi Regime, and later during the Soviet rule of East Germany the organization became state-owned. Germany's re-unification, exposed Halloren to a different social, political, and economic climate. Suchard was established by an inventor, Phillipe Suchard, who paid much attention to the quality and efficiency of the production process. Furthermore, the operations of Suchard were internationalized early on through the work of travelling salesmen. Cadbury, was a family firm for most of its history, until the hostile takeover by Kraft Foods. The company was operated according to the Quaker tradition and values, employees worked hard but received good pay, education, and the opportunity to use leisure facilities. 'The Factory in the Garden' – Bournville – was much more than a production plant and ahead of its time. The succession in the company followed a natural

familial route, from an early age onwards the Cadbury children were groomed to work in and take leadership of the firm. Probably it is the most well-known and most studied organization of the three (e.g., Rowlinson & Hassard, 1993).

We collected and analyzed over 2,000 artifacts, including chocolate wrappers, invoices, letters, display boxes, pictures of buildings and vehicles, internal magazines and folders, advertisements, posters, keychains, and toys. We analyzed these artifacts to uncover when and how TADs were used and observed that Cadbury made little use of TADs, Suchard more, but mainly outside its home country Switzerland, and a distinct pattern in the use of TADs by Halloren was evident. In the latter case, TADs use followed changes in ownership or leadership, was abandoned with a change in name during the Nazi Regime, was briefly reinstated after WWII, but before expropriation, and only resurfaced in 1991, when the firm was privatized.

Overall, we observed five different purposes and five different forms of TADs. We observed that TADs are used to communicate organization history, create a sense of stability and continuity, foreground organizational characteristics, reinforce group membership, and function to serve marketing and sales ends. We observed TADs in five different forms: those relating to the organization, relating to its buildings and facilities, celebrations of anniversaries, relating to awards and achievements, and to products.

The main contribution of chapter 3 is to the organizational symbolism, organizational communication, and organizational history literatures (e.g., Dandridge et al., 1980; Eisenberg, 1984; Hatch & Schultz, 2017; Vaughn, 1995). We found how a seemingly small and subtle symbol is used by organizations to guide attention and ostensibly facilitates perceptions of stability and continuity in the wake of change. In addition, TADs are easily accessible devices to communicate history, without extensive narratives and discourses. Yet, we also found that the use of TADs is not a necessity. Not only did we observe that organizations do not continuously use TADs, but one of our cases hardly used TADs at all. This suggests that substitutes might exist that fulfill similar purposes. For instance, the continuity in the leadership of an organization, its name, its location, etc. However, it remains for future research to explore whether these substitutes share a similar meaning, or whether their meanings differ while having a similar function.

In chapter 4 we explored whether and when TADs gain attention, and how TADs affect individual's judgement and perception of the organization. This study uses experiments to test a set of hypotheses, building on studies on visual attention (e.g., Rosenholtz, 2001; Wolfe, 1998; Wright, 1998) and corporate and organizational identity (Baker & Balmer,

1997; Balmer, 2012; Pecot et al., 2018). Given that TADs seem small and subtle, they might be easily overlooked, thus the first experiment concentrates on when TADs are more likely to receive attention. Prior research on organizational symbolism has based its research on the premise that symbols are meaningful and will attract attention (Alvesson, 1991; Dandridge et al., 1980; Gioia et al., 1994; Schultz et al., 2006). Yet, given the plethora of symbols and visual distractors, this assumption might not be as straight forward as prior research assumed. We argued that TADs are accessible symbols, that are relatively easy to interpret because of their relation to the time reckoning system. Consequently, we believe that they will be noticed, capture attention, and have bearing on judgment formation and decision making. Indeed, our experimental results suggest that TADs are noticed and paid attention to.

Furthermore, in the second experiment we tested the effects of TADs on an individual's perception of the organization. Indeed, TADs have an effect on the observer's perception of the organization and depending on the type of TAD, different dimensions of the perception are affected. Interestingly, we found that present and especially future TADs positively affect more dimensions of the organization than past TADs. However, both experiments were conducted with university students as subjects. This might have affected their attention to and perception of TADs, as age influences people's temporal orientations (Holman & Silver, 1998; Trope & Liberman, 2003; Zimbardo & Boyd, 1999). Hence, it remains for future research to test our findings on a more diverse sample and examine their generalizability.

Chapter 4 contributes to organizational symbolism and perceptions of organizations literatures (e.g., Alvesson, 1991; Dandridge, 1979; Dandridge et al., 1980; Ornstein, 1986). Most studies on the use of symbols by organizations focus on intended or internally perceived meanings (e.g., Hatch & Schultz, 2017; Schultz et al., 2006), we extend these studies by exploring the perceived meaning and effects of symbols. Furthermore, we corroborated the premise that symbols are observed, but have also unveiled that not all symbols receive equal attention.

Discussion

I started the thesis with the idea that TADs are small, subtle symbols often overlooked, but also used by many organizations in addition to other symbols (e.g., location references, color, name, buildings, etc.) and symbolic practices. Consequently, the main research question of the thesis, '*how do TADs serve organizations' meaning making?*', locates TADs in a much broader domain of meaning making (e.g., Glynn, 2000; Glynn & Abzug, 2002; Hatch & Schultz, 2017). Indeed, in chapter 2 many other meaning makers were

studied in addition to TADs, and in chapter 3 we observed that TADs are not necessary devices to construct meaning, in other words their function can be substituted by other devices. Yet, in chapter 4 we found that TADs affect audiences' judgment of organizations, thus TADs can serve an organization's meaning making.

Prior work has already established that organizations use symbols and symbolic practices to make meaning, i.e. "to reveal or make comprehendable the unconscious feelings, images, and values that are inherent in that organization" (Dandridge et al., 1980, p. 77),. The power of symbols lies in their ability to communicate meaning beyond utilitarian value (e.g., Fotaki, Altman, & Koning, 2020). To the extent that symbolism integrates emotions, actions, and cognitions into generally shared codes by organizational members, it becomes an important foundation of the organization (Rafaeli & Worline, 2000). Consequently studies found symbols to be useful as carriers of organizational knowledge (e.g., Lemon & Sahota, 2004; Whyte, Ewenstein, Hales, & Tidd, 2008), to understand or clarify organizational processes (e.g., Czarniawska & Gagliardi, 2003; Yakura, 2002), as repositories of and to (re-)create and maintain organizational identity (e.g., Hatch & Schultz, 2017; Kroezen & Heugens, 2012; Schultz et al., 2006), and as devices to exhibit and gain legitimacy (e.g., Glynn, 2000; Glynn & Abzug, 2002; Glynn & Marquis, 2004). These studies often focus on a single or a couple of organizations and a single or few instances of the use of symbols (exceptions, for instance, are Glynn & Abzug, 2002; Glynn & Marquis, 2006). As such, relatively little attention has been paid to the placement of these symbols in a much broader context, over time, the wider institutional environment, different audiences, and other organizations. The focus on a single symbol, TADs, but studying it at different levels of analysis, in different settings, and over time has contributed to understanding symbols' meaning making. In that sense, each chapter has answered a part of the general research question.

In chapter 1, the meaning and origins of TADs was explored, in chapter 2 it was corroborated that TADs are boundary crossing devices, occurring in all studied fields. Their ubiquity makes it more plausible that the meaning of TADs is partly derived from a much broader and pervasive institution, i.e. time-reckoning systems and in particular the Gregorian calendar. Partly, the meaning of TADs is bestowed by the organization that used the TAD – explored in chapter 3, and the audience that evaluates the TAD – shown in chapter 4. Consequently, the same TAD can be interpreted quite differently, or have a different meaning, depending on the environment, the interpreter, and the time in which it is being interpreted. That explains why the organizations that are studied in chapter 3 did not use

TADs continuously over time: the circumstances might have called for other symbols or might have made TADs inappropriate. However, that is a question that needs to be explored further in future research.

Because TADs are derived from a broader institution, they are an easy to use symbol for organizations to reach a broad audience. Consequently, they represent a symbol that is easy to interpret and thus inform the judgment of an audience for whom the organization is unfamiliar (chapter 4). Hence, TADs serve organizations' meaning making as they are derived from a well-known and almost universal institution. Furthermore, TADs are infused with institutionalized meanings and values, but also organization specific meaning, and individual perceptions. TADs are relatively easy to use and to discontinue using, without raising much turmoil, internally and externally – as they are often taken for granted.

Future research

Although I found answers to the questions posed at the start of the PhD project, new questions emerged during the process that remain for future research to be answered. First, to gain a deeper understanding of TADs, future research can attempt to unravel the origin of TADs. We have alluded to coins, wine, and whiskey to be a source of inspiration in chapter 1, however more systematic research should be done. One approach is to trace the first occurrence of TADs in databases on trademarks, for instance via the World Intellectual Property Organization or the United States Patent and Trademark Office. If we can understand when TADs first emerged, we may be able to understand their meaning better. Second, our studies focus on European organizational fields, organizations, and audiences. Although this has provided valuable insights, we acknowledge that perceptions of time are deeply ingrained in societies and cultures (Zerubavel, 1987, 2003). For that reason, we would like to expand our research to more diverse international settings. For instance, if countries have a relatively shorter documented history, would that affect what they observe as distant and recent past? How do individuals that use different time reckoning systems express and interpret TADs? While unsystematic observations indicate that TADs are present in many societies and countries, the question remains whether organizations from different cultural backgrounds differ in their use of TADs.

Third, in the process of this PhD project I encountered organizations using TADs that refer to the 'wrong' date. For instance, Halloren referred to 1803 at some point as its year of establishment, I observed beer breweries that loosely interpreted what it means to be established, and I found a tea and coffee specialist that changed its TAD after many years,

because it could not find evidence corroborating the formerly used TAD in the distant past. In short, TADs are sometimes, either intentionally or not, incorrect claims concerning past events. These instances highlight that not only the yet to happen future is based on imaginations and expectations, but also the past and present. This raises questions to how TADs are used to construct imagined realities, in the past, present, in addition to the future, and how this affects the organization, its internal members, and external audiences.

Fourth, this thesis focused solely on the use of a single symbol. Yet, as we have observed in chapter 2, organizations combine different symbolic elements to create their identities and tell their stories. In chapter 3, we observed that there may be some substitutes for TADs. This raises the question how symbolic elements are combined and recombined to further organizational needs and goals, and how this changes the meaning of TADs. Future research can focus on these combinations and explore other symbolic elements such as geographic anchoring devices (GADs), family anchoring devices (FADs), and professional anchoring devices (PADs), among many others.

Fifth, throughout the thesis I referred to internal, organizational members, and external, outside evaluators, audiences. In chapter two the main audiences were other organizations and more generally organizational fields. In chapter three, the audiences were both internal members and a wide set of external audiences, e.g., (potential) consumers, other organizations, local residents, political parties, etc. In chapter four the audience was potential customers or bystanders. Grouping a plurality of audiences in the general categories of 'internal' and 'external' does not do justice to the differences between these audiences. Consequently, the meaning of TADs may not only stem from the wider institutional environment, the organization, and a homogeneous audience interpreting the TADs, but a very long list of heterogeneous audiences interpreting TADs. In future research it would be interesting to look at the differences between the varied audiences in greater detail.

Conclusion

Overall, I hope to have shed light on TADs as a symbol and demonstrated the value of investigating this phenomenon. I explored the concept theoretically in chapter 1, in chapter 2 observed them crossing field boundaries, in chapter 3 gained an in-depth understanding of the different forms and purposes and the use of TADs over time, and in chapter 4 explored first results regarding the effect of TADs on the perception of individuals. This thesis has provided insights about a priory rarely studied phenomenon, in different contexts, using different methods, and looking at different levels of analysis. TADs, seemingly small and

subtle, and often taken for granted, are complex and rich symbols. They can represent different meanings, fulfill different purposes, and affect different dimensions of organizations, some of which studied in this thesis and many to be discovered in future research.

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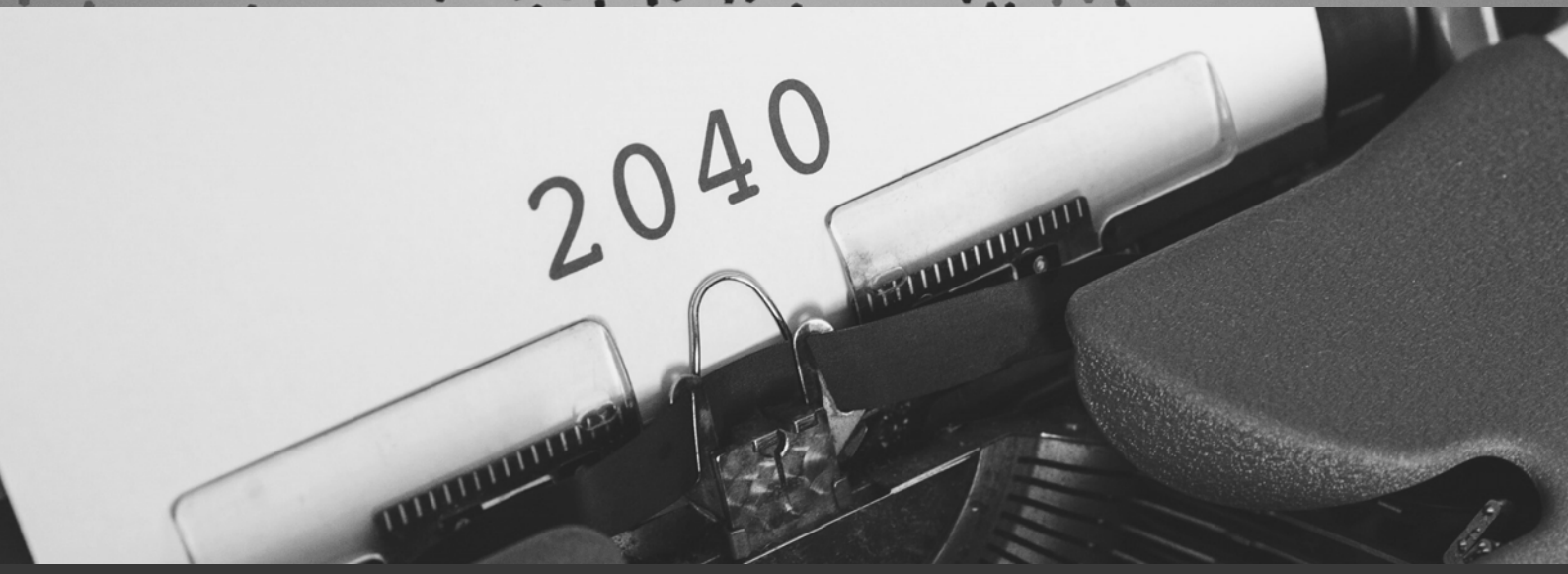


APPENDIX I

TEMPORAL ANCHORING DEVICES: THE COLLECTION

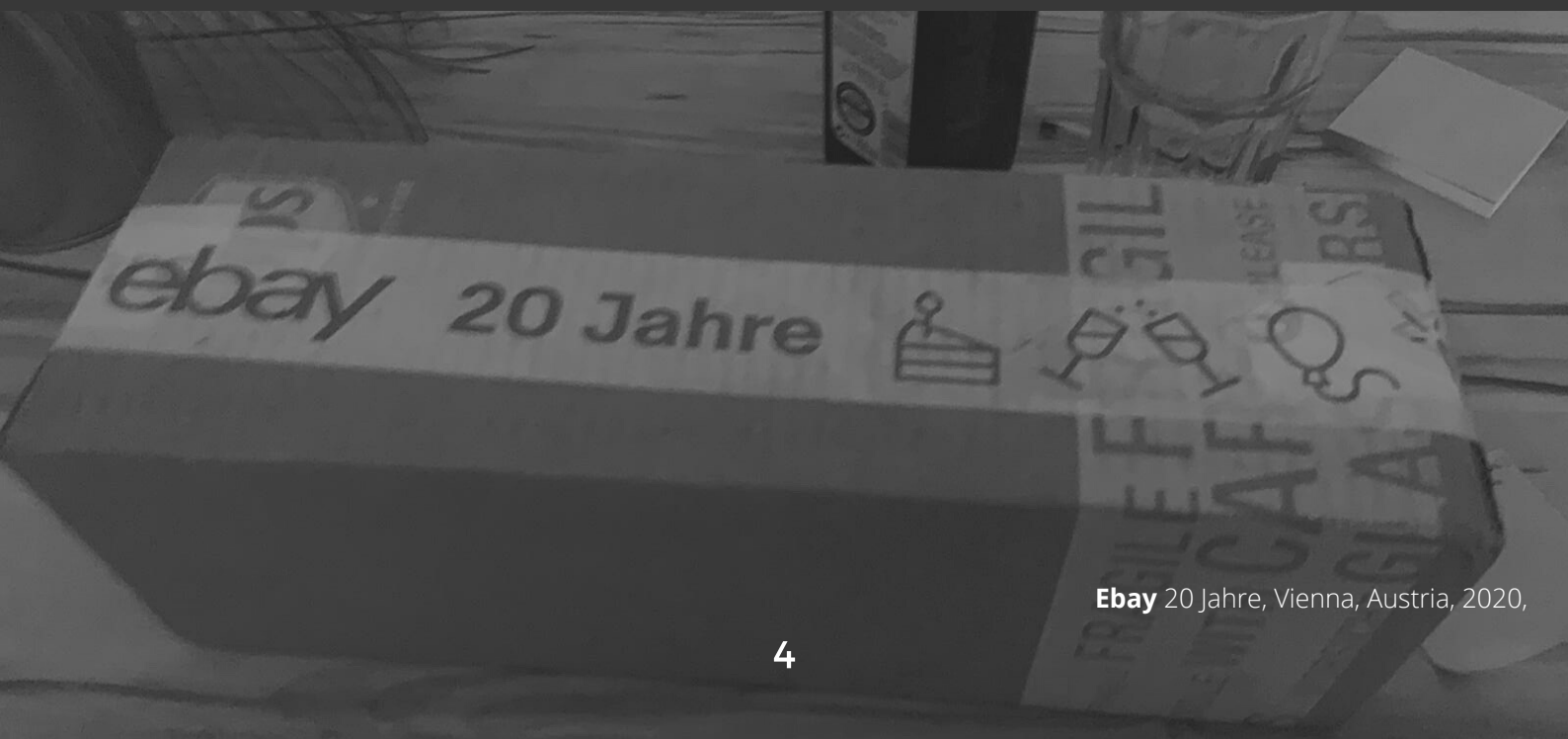
STEPHANIE KOORNNEEF

Old mout cider pronounced incorrectly since 1947, Vienna, Austria, 2020.

Karakter Est. 2016, Tilburg, the Netherlands, 2017.

Bistro no. 3 est. 2019, Vienna, Austria, 2018.

Only our story since 1995, Waalwijk, the Netherlands, 2020, © Kimberley van Hest



Ebay 20 Jahre, Vienna, Austria, 2020,

SMart seit 15. Spetember 1999, Vienna, Austria, 2018,

Villa Cecilia desde 1953, Chocontá, Colombia, 2018.

Marea made to last Est. 2015, Cartagena, Colombia, 2018.

Chocoramo desde 1950, Isla de Providencia, Colombia, 2018.

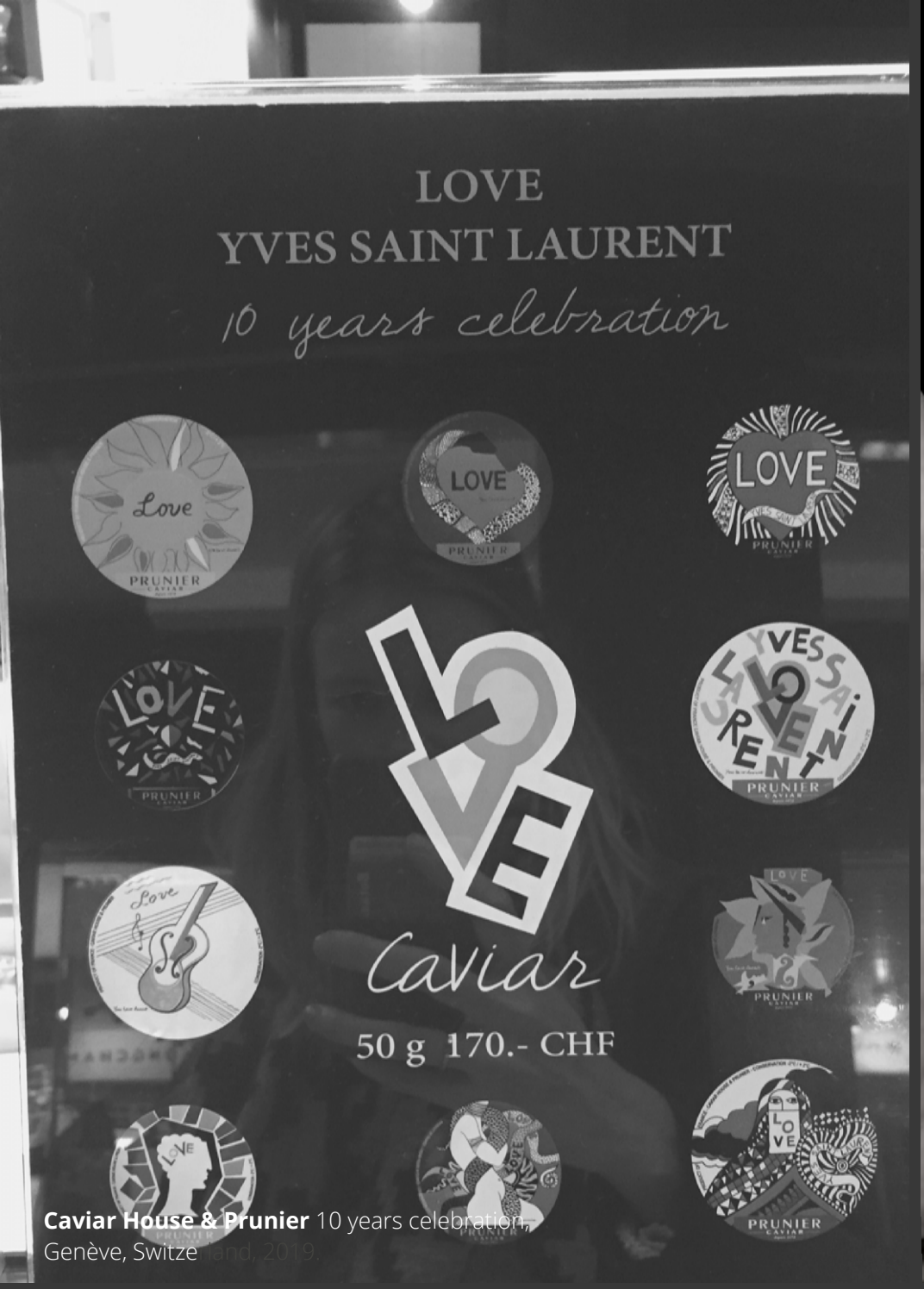
La Rosa del Viento since 1994, Isla de Providencia, Colombia, 2018.

Cervera since 1987, Uppsala, Sweden, 2019.

Iitala timeless design since 1881, Uppsala, Sweden, 2019

D1 anno 2007, Uppsala, Sweden, 2019.

Klaus 1856, Chamonix, France, 2019.



Caviar House & Prunier 10 years celebration, Genève, Switze land, 2019.

Favarger depuis 1826, Genève, Switzerland, 2019.

Goldkenn 1889, Genève, Switzerland, 2019.

Cafés Richard 1892, Chamonix, France, 2019.

be we em. 15 jahre, Vienna, Austria, 2019.

Mortinger seit 1872, Vienna, Austria, 2018.

1000 Tische & Stühle seit 1968, Vienna, Austria, 2018

Cirio 1856, Vienna, Austria, 2020.

Aperol dal 1919, Vienna, Austria, 2020.

Monini dal 1920, Vienna, Austria, 2020.

Lavazza 1895, Vienna, Austria, 2020.

Monopoly since 1955, Tilburg, the Netherlands, 2020. © Joyce Kox

Willem II Tilburg 1896, Tilburg, the Netherlands, 2020.

Henri Bloem 1833/40 jaar, Tilburg, the Netherlands, 2020.

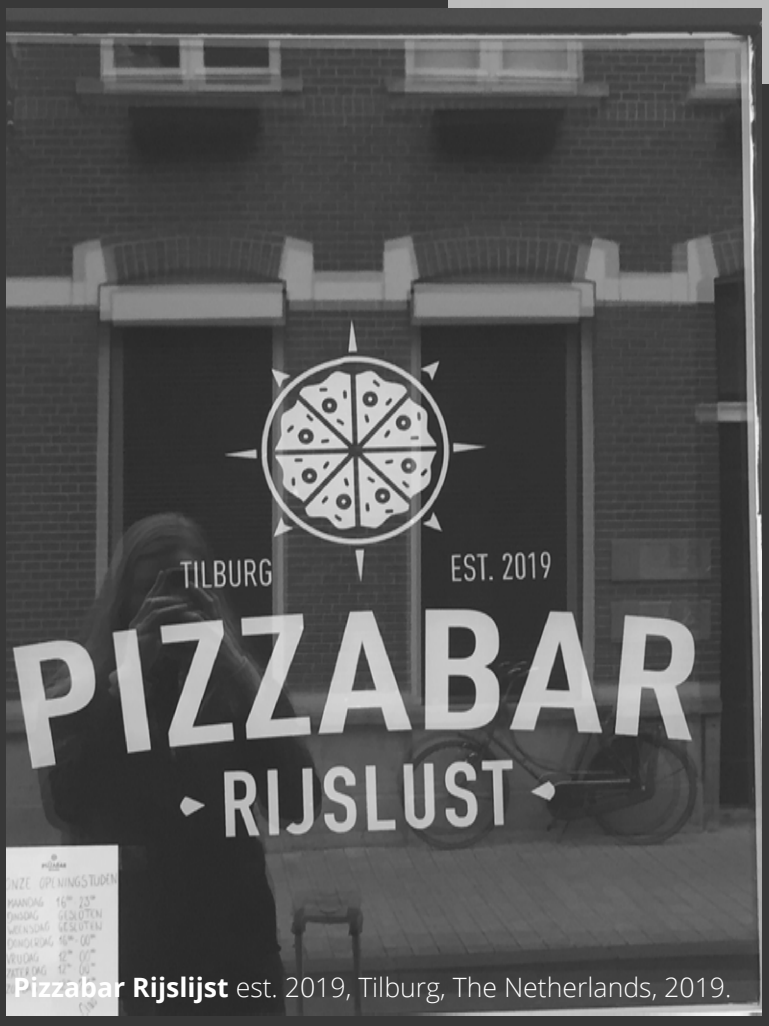
Tilburg University 90 jaar, Tilburg, the Netherlands, 2017.

THE PRESENT

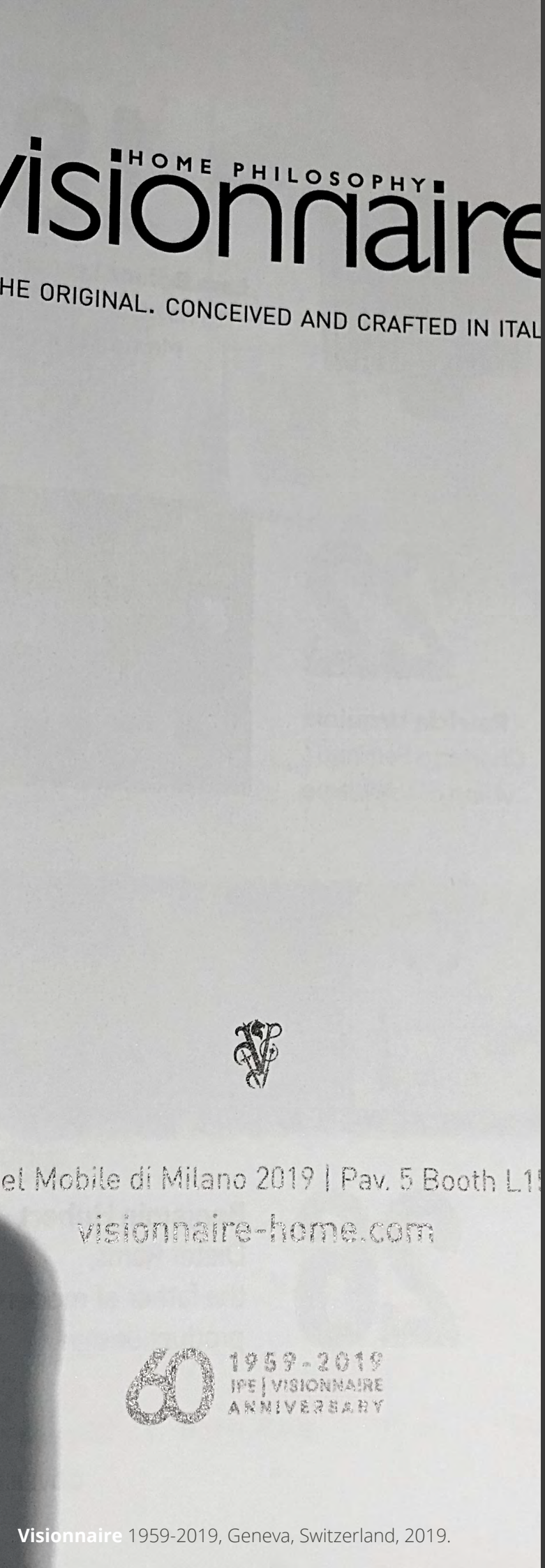
Stadscafé Brick est 2020, Tilburg, the Netherlands, 2020 © Rob Koggel.

Eetcafé Oud Rooij 2020, Sint Oedenrode, the Netherlands, 2020, © Joris Berns.

Sheep Inc., 2019, Tilburg, The Netherlands, 2019.



Pizzabar Rijslijst est. 2019, Tilburg, The Netherlands, 2019.



Visionnaire 1959-2019, Geneva, Switzerland, 2019.

Pop-up Restaurant 2017, Antwerp, Belgium, 2017.

Ammutsøn est. 2018, Vienna, Austria, 2018.

Scheersalon Du Nord sinds 2015, Tilburg, the Netherlands, 2015.

Twist Tilburg anno nu, Tilburg, the Netherlands, 2020.

THE FUTURE

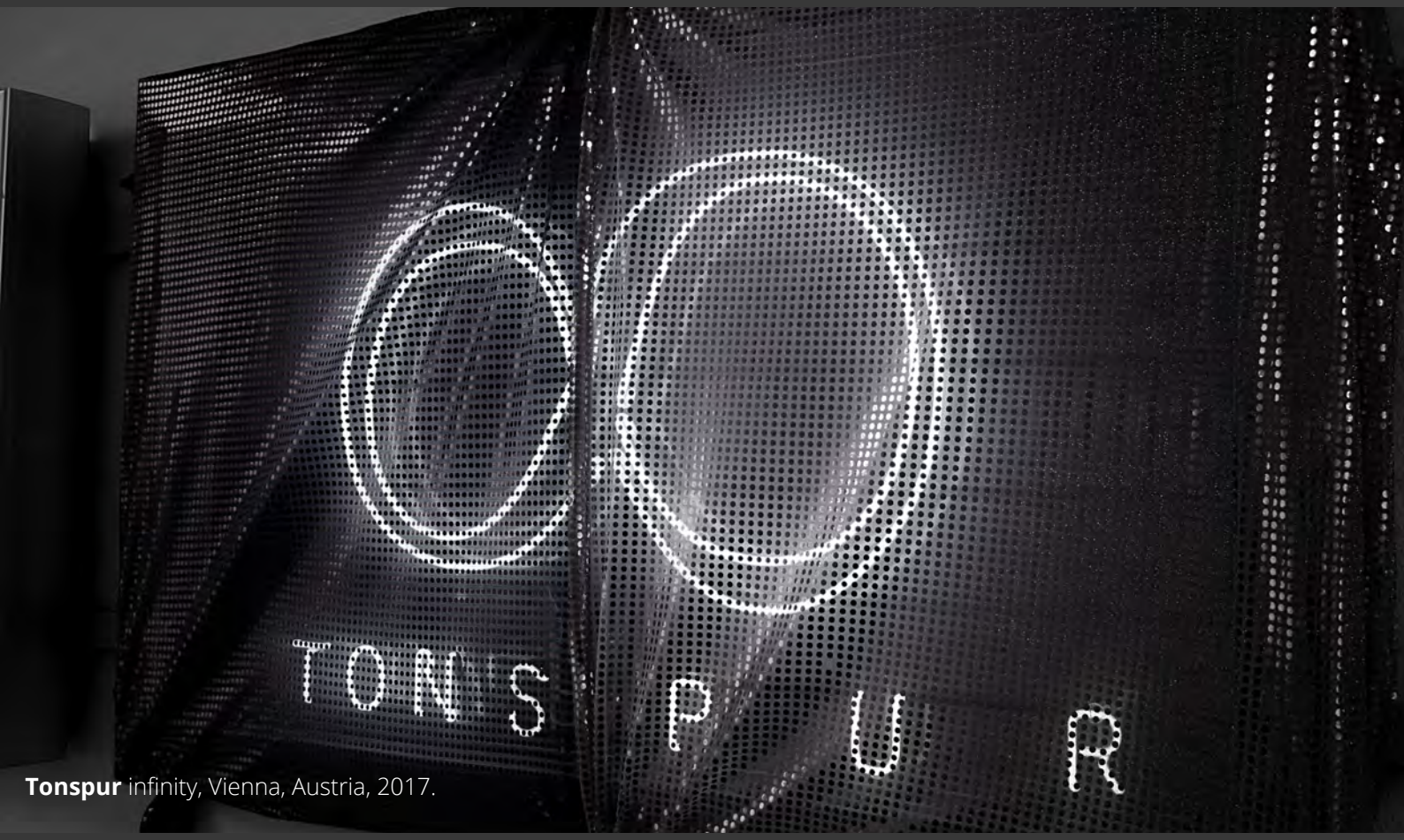
Erste Sparkasse the future is yours 200 Jahre, Vienna, Austria, 2020.

Adriawien forever, Vienna, Austria, 2019.

Thessaloniki Half Marathon 2019 established in the future, Thessaloniki, Greece, 2019.

University of Edinburgh writing the future since 1919, Edinburgh, Scotland, 2019.

Bol.com denken aan de toekomst, Tilburg, the Netherlands, 2020.



Tonspur infinity, Vienna, Austria, 2017.

KLM celebrate the future/100 years, Amsterdam, the Netherlands, 2019.

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This thesis seeks to shed light on the ubiquitous, yet rarely studied, phenomenon *temporal anchoring devices* (TADs). TADs are short references to time often accompanied by a descriptor, such as "since year". They are used, for instance, on organizations' buildings, products, logos, etc. In the introduction, chapter 1, TADs are explored conceptually, both their meanings and origins. Chapter 2 shows that TADs cross organizational field boundaries and are used by varying organizations. Chapter 3 focuses on the use of TADs over 200-years by three chocolate producers. Not only do the studied organizations vary in their use of TADs, from almost no use to very extensive use, the use of TADs over time by these organizations is not stable. Chapter 4 focuses on how TADs affect audience perception of the organization, with the use of two experiments. The results of the first experiment that TAD are noticed and capture the attention of observers. The results of the second experiment show that each TAD, whether referring to the past, present, or future, affects audience members' perception of an organization. Overall this thesis contributes to the literatures on organizational symbolism, history, and temporality.

Stephanie Koornneef (1989) received her bachelor degree in International Business Administration from Tilburg University in 2011. She completed her master Strategic Management at Rotterdam School of Management in 2012. She returned to Tilburg University for her Research Master in 2014, to continue with the Ph.D. Part of the research reported in this dissertation was conducted as a visiting scholar at the Vienna University of Economics and Business. Currently, she is an Assistant Professor of Strategy at Radboud University.

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